DOCUMENT RESUME

ED 262 734 HE 018 821

| | |
|---|---|
| TITLE | Validation of Student and Parent Reported Data on the Basic Grant Application Form: Pre-Award Validation Analysis Study. Revised Final Report. |
| INSTITUTION | Applied Management Sciences, Inc., Silver Spring, Md. |
| SPONS AGENCY | Bureau of Student Financial Assistance (DHEW/OE), Washington, D.C. |
| PUB DATE | 26 Sep 79 |
| CONTRACT | 300-76-0354 |
| NOTE | 150p.; For related documents, see HE 018 812-826. |
| PUB TYPE | Reports - Evaluative/Feasibility (142) |
| EDRS PRICE | MF01/PC06 Plus Postage. |
| DESCRIPTORS | *Accountability; *College Students; Disclosure; *Eligibility; Error Patterns; *Evaluation Criteria; *Financial Aid Applicants; Financial Needs; Grants; Higher Education; Income; Program Evaluation; Student Characteristics; *Student Financial Aid; Student Records |
| IDENTIFIERS | *Basic Educational Opportunity Grants |

ABSTRACT

The 1978-1979 pre-award institution validation process for the Basic Educational Opportunity Grant (BEOG) program was studied, based on applicant and grant recipient files as of the end of February 1979. The objective was to assess the impact of the validation process on the proper award of BEOGs, and to determine whether the criteria for selecting students for validation could be improved. The validation population of 119,790 applicants was comprised of two groups: those selected according to pre-established criteria (87 percent) and those selected at random (13 percent). The rest of the applicant population consisted of those who met the pre-established criteria and those who did not. In almost 90 percent of the validation cases, data items were valid. The processing system edits appeared to be eliciting valid data, resulting in an accuracy rate of about 90 percent for each of the validation fields. The edits were causing applicants to make most of the necessary corrections to applications before validation. The criteria used to select applicants for validation were generally adequate in detecting misreporting. However, individual criteria varied in their effectiveness. (SW)

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VALIDATION OF STUDENT AND PARENT REPORTED DATA
ON THE BASIC GRANT APPLICATION FORM

PRE-AWARD VALIDATION ANALYSIS STUDY:
REVISED FINAL REPORT

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## PRE-AWARD VALIDATION ANALYSIS STUDY: REVISED FINAL REPORT

September 26, 1979

Prepared For:

Bureau of Student Financial Assistance
U.S. Office of Education
Department of Health, Education, and Welfare

Contract No. 300-76-0354

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# VALIDATION OF STUDENT AND PARENT REPORTED DATA ON THE BASIC GRANT APPLICATION FORM

This report was prepared pursuant to Contract No. 300-76-0354. The amount charged to the Department of Health, Education, and Welfare for the work preceding and resulting in this report is $60,361.80. The names of the persons employed by the contractor with managerial or professional responsibility for such work are as follows:

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## Executive Summary

This is a report of the findings of a study of the 1978-79 Basic Grant pre-award institution validation process, based on the applicant and recipient files as of the end of February, 1979. This study was designed to assess the impact that the validation process was having on the proper award of Basic Grants, and to determine whether the criteria for selecting students for validation could be improved. The major findings of the study are highlighted, as follows:

### Corrections Behavior of the Population

- The validation population (119,790 applicants) was comprised of two groups--those selected according to pre-established criteria (104,162 or 87 percent) and those selected at random (15,623 or 13 percent). The rest of the applicant population was divided into two groups, as well--those meeting the pre-established criteria and those who did not. Approximately 97 percent of the validation applicant population was eligible to receive an award, and about 25 percent had entered the recipient file as of the end of February, 1979. Those who had attained recipient status reduced their award potential after their selection for validation by about $17.00 ($1.00 for the random group). Those who are not yet on the recipient file have reduced their award potential by about $13.00 ($2.00 for the random group). Approximately 34 percent of eligible validation applicants who have not yet entered the recipient file have had a post selection transaction (25 percent for the random group). This means that a large proportion of eligible validation applicants had not enhanced their chances of receiving an award as of the end of February, 1979.

### Adequacy of the Pre-established Criteria

- The analyses of the pre-established criteria (PEC) used to select applicants for validation have shown that there are few



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criteria which more effectively predict misreporting than those currently being used. However, certain of the existing criteria are very effective, while others are virtually ineffective. Modifications to certain of the criteria indicate that more accurate prediction could be achieved.

- The corrections behavior of applicants selected according to the PEC results in larger increases to the eligibility index and decreases in award potential than that of randomly selected applicants.

Relationship of the Processing System Edits and Validation

- The processing system contains new and more restrictive edits for the 1978-79 academic year. Many of these edits are related to the data fields designated in the PEC. In almost 90 percent of the validation cases, data items were valid at applicants' selection for validation. For these cases, the edits appeared to be soliciting valid data, thereby rendering validation unnecessary. Furthermore, the corrections behaviors of PEC validation applicants were similar to those of applicants not selected for validation who met the PEC. These findings suggest that the edits are most effective in eliciting the proper data.

In summary, it appears that the processing system edits are eliciting valid data, and resulting in an accuracy rate of about 90 percent for each of the validation fields. This can be contrasted with the findings of the 1974-75 and 1976-77 IRS studies, which found adjusted gross income to be accurate (within $200) for 77.7 and 69.9 percent of the eligibles, respectively. It seems as though the edits, or the edits in concert with validation, are resulting in dramatic gains in reporting accuracy. Given these findings, we recommend that another IRS study be conducted to determine the accuracy of data reported in response to the edits, and the accuracy of data validated by the financial aid officers.

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## REPORT SUMMARY

This report presents the major findings of the Pre-Award Validation Study for the 1978-79 Basic Grant Program. The focal issues for this study were:

- to determine whether, and to what extent, the pre-award institution validation of selected Basic Grant applicants was having an impact on those applicants' corrections behavior, and ultimately, their award potential,
- to determine whether the pre-established criteria, used to select 87 percent of the validation applicants, are effective in predicting the applicants most likely to misreport data on their applications, and
- to determine whether there are other conditions/characteristics which more adequately define/predict misreporting than the current pre-established criteria.

Each of these issues was further specified in terms of related sub-issues for analytic and reporting purposes (see Sections 2.1, 3.1, 4.1 and 5.1 of this report.)

The study population was composed of all regular or non-supplemental applicants who had applied for a Basic Grant for academic year 1978-79 as of February, 1979. For analytic purposes, the study population was divided into four comparison groups, as follows:

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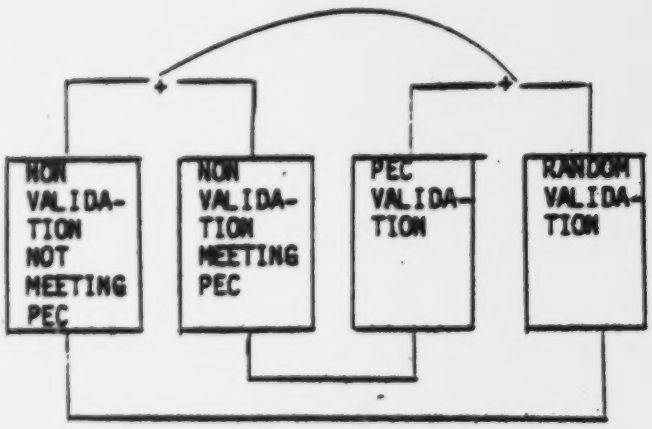
| | | |
|---|---|---|
| -- | Applicants selected according to the pre-established criteria for validation | 104,162 (about 5% of eligible population) |
| -- | Applicants selected at random for validation | 15,628 (about 1% of eligibles) |
| -- | Nonvalidation applicants who met at least one of the pre-established criteria, and | 341,568 (16% of eligibles) |
| -- | Nonvalidation applicants who did not meet any of the pre-established criteria | 1,663,110 (79% of eligibles) |

The following comparison groups were utilized throughout this study:




These comparison groups were examined for differences in:

- corrections behavior (pre and post selection for validation or establishment of initial eligibility, as measured by frequency, magnitude and direction of changes submitted to application) and
- impact of corrections on eligibility index, eligibility status and expected award payments.

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The major findings with respect to these groups are as follows:

| | ALL APPLICANTS | PEC | RANDOM | NONVALIDATION MEETING PEC | NONVALIDATION NOT MEETING PEC |
|---|---|---|---|---|---|
| Total | 2,124,468 | 106,162 | 15,628 | 341,568 | 1,661,110 |
| % over corrected | 40.0 | 100.0 | 55.5 | 100.0 | 23.7 |
| - % effective EI change | + 15 | + 58 | + 29 | + 5 | + 13 |
| % corrective since selection or eligibility | 8.1 | 36.7 | 27.4 | 7.6 | 6.2 |
| - % effective EI change | + 77 | + 158 | + 58 | + 71 | + 48 |
| % on recipient file | 45.2 | 23.0 | 27.6 | 43.1 | 47.0 |
| - % correcting since selection or eligibility | 6.6 | 30.7 | 26.9 | 6.8 | 5.4 |
| % not on recipient file | 54.8 | 74.9 | 72.3 | 56.8 | 52.9 |
| - % not correcting since selection or eligibility | 90.5 | 61.2 | 72.3 | 91.7 | 93.0 |

The major findings of these comparative analyses are summarized below, with references to Chapter and Section of the report where more detailed information can be found.

ADEQUACY OF THE PRE-ESTABLISHED CRITERIA

It was found that the criteria used to select applicants for validation are generally adequate in detecting misreporting, and are, in fact, more effective than most of the new conditions tested, in this regard. This study has shown, however, that the individual criteria vary a great deal in their effectiveness, as indicated by the following summary:

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| VERY EFFECTIVE | SOMEWHAT EFFECTIVE | NOT VERY EFFECTIVE |
|---|---|---|
| A6 | A10 | A1 |
| A2 | C3 | A4 |
| A3 | C1 | A5 |
| C2 | B3 | A7 |
| | | A8 |
| | | A9 |
| | | B2 |
| | | B1 |

(For further detail on the PEC, see Appendix C)

(Chapter 2, Section 3)

All analyses showed the income and tax inconsistency criterion (A6) to be the most effective of all the criteria, but analyses of applicants meeting multiple criteria and of new PEC pointed up the desirability of the following refinements to the existing PEC:

- Select all applicants who first meet the criterion with income and portions inconsistent (A2) then meet either the income and tax inconsistency criterion (A6) or the income and unusual expenses criterion (A3) and those who first meet A6 then meet the applicant resources criterion (A9), since these applicants are more likely than other applicants to make post selection corrections which reduce award potential. (Section 2.4)
- Applicants who meet the existing income, benefits and household size conditions for criteria A4 and A5, if modified by the addition of the condition that eligibility index is greater than zero, make the largest post selection reductions in their award potential. (Section 2.5)
- The effectiveness of the current income and tax inconsistency (A6) criterion could be increased by adding the condition of no farm or business assets. (Section 2.5)
- Applicants correcting applicants' resources, social security benefits and unreimbursed school tuition make large changes to these fields (but in variant directions). Perhaps the current criterion relating to applicants' resources (A9) could be combined with conditions indicating changes to these other two fields to produce one effective criterion. (Section 2.5)
- Eliminate criteria A1, A7 and A8 from further use in selecting applicants for validation, since random selection predicts potential misreporting more effectively than these criteria.

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VARIATION IN CORRECTIONS BEHAVIOR BY APPLICATION SOURCE

To determine whether application source was having an impact on applicants' correction behavior in academic year 1978-79, we examined the following indicators relative to application source:

- percent filing from each source to be validated,
- current and previous eligibility status,
- average initial eligibility index,
- average effective eligibility index change, and
- validity of data fields.

These analyses point out that there is significant variation by application source on most of the indicators. Major findings are summarized as follows:

- CSS applicants are overrepresented among validation applicants and BEOG applicants, underrepresented according to their proportions in the entire applicant population.
- CSS and PHEAA applicants are rejected more frequently than BEOG and ACT applicants. PHEAA applicants have the most success in re-entering the processing system after rejection, but a high proportion of those who re-enter become ineligible.
- ACT applicants become eligible after rejection with greater frequency than applicants filing from other sources. BEOG applicants, once rejected, remain rejected at higher rates than any other applicants. (Section 3.3)

There is little variation by application source in the most successful pre-established criteria (in terms of percent correcting since selection and increase in eligibility indices). Criteria A2, A3 and A6 are the best criteria by these standards across application sources. However, certain other criteria are effective and do vary by application source. These are:

-- ACT filers who meet criteria B3, A10 and C3
-- CSS filers who meet criterion B3, and
-- PHEAA filers who meet criterion B1.

It might be cost-effective to select some applicants for validation specifically by application source who meet the above-listed criteria. (Section 3.4)



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A major finding of this report is that the processing system edits are causing applicants to make most of the necessary corrections to their applications before validation. This is true regardless of the source of the application. There are, however, slight variations in the rate and timing with which data fields are valid (i.e., the data upon which the applicant was paid) by application source.

Following are the most salient differences:

-- ACT filers have more than 86 percent of all items valid at selection and more than 56 percent of all items always valid pre-selection; they have the best accuracy record;

-- BEOG applicants are slightly less likely than others to have valid items at selection; and

-- CSS and PHEAA applicants are least likely to have items always valid pre-selection (i.e., AGI and dependency status are valid in fewer than 50% of the cases). (Section 3.5)

As of the end of February, 1979, only 25 percent (or 3,354) of validation applicants were on the recipient file (expected to be paid). In general, those who were expected to be paid as of this date, on the average, reduced their award potential after their selection for validation by an average of $17.50, while those not on the recipient file tended to submit post selection corrections which reduced their award potential by $12.90. For those who actually had a post-selection transaction, the average award reductions were $36.00 for those expected to be paid, and $38.00 for those not yet on the recipient file. These trends are consistent across application source, but there is some variation in the degree of impact of post selection corrections on award potential by application source. The chief differences are:

- PHEAA filers, regardless of whether they are or are not on the recipient file, tend, on the average, to reduce award potential by the greatest amount.
- BEOG filers not on the recipient file reduce award potential by the least amount. (Section 3.6)

Overall, PHEAA and CSS filers seem to experience rejection for missing data more often than BEOG or ACT filers. This indicates that form re-design or clarification in the instructions may be in order.

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are based on only those applicants who have succeeded in entering the recipient file as of the end of February, 1979. However, responses to the edits seem to be resulting in even greater award reductions than those noted for validation applicants alone. (Section 4.2)

INTERACTIVE EFFECTS OF VALIDATION AND THE PROCESSING SYSTEM EDITS

The total effect of validation applicants' corrections since selection is summarized, as follows:

| REDUCED AWARD POTENTIAL (OR SAVINGS) | | | | INCREASED AWARD POTENTIAL (OR LOSS) | | | |
|---|---|---|---|---|---|---|---|
| | # | PAYMENT (OR CHANGE) | TOTAL REDUCED AWARD | | # | PAYMENT (OR CHANGE) | TOTAL INCREASED AWARD |
| Current Eligibles, not on recipient file[1] | 84,346 | $-12.9 | $-1,088,063 | Current ineligibles, on recipient file | 91 | $850.1 | $ 77,413 |
| Current Eligibles, on recipient file | 29,887 | $-17.3 | - 323,022 | Current rejected applicants, on recipient file | 373 | 1020 | $380,831 |
| Current Ineligibles, not on recipient file | 3,085 | $-760.6 | -2,346,842 | | | | |
| Current rejected applicants, not on recipient file | 2,004 | — | — | | | | |
| TOTAL | | | $-3,957,927 | | | | $458,244 |
| | NET IMPACT = | | $3,499,683 | | | | |

[1] This is based on the assumption that all currently eligible applicants will eventually receive an award. Since it is likely that not all of these applicants will achieve recipient status, these savings are underestimated to an unknown extent.

It is interesting to note that some currently ineligible and currently rejected applicants have succeeded in obtaining an award.

We attempted to determine the separate impact of the processing system edits and the validation process on applicants' corrections, by examining, for validation applicants, the timing of valid data items on their applications and comparing the values of those items at three points in the transactional history: (1) at receipt of related edits, (2) at selection for validation and (3) at payment. (Only validation applicants currently on the recipient file were included in this analysis.) It should also be remembered that these findings may be

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biased because those applicants who are on the recipient file have, on the average, increased their award potential, and because the data fields examined were those relating to validation only. The chief findings were that:

- Three percent of all validation applicants who had an expected payment, were paid before selection for validation.
- Validation was unnecessary to obtain valid data items with 89 percent or better frequency. There was variation in the effectiveness of the edits with regard to different data items, however. For household items -- number enrolled in postsecondary education and household size -- the edits caused applicants to erroneously correct fields more often than for other fields. Validation was more likely to be necessary to achieve valid data for adjusted gross income, sum of portions, nontaxable income and taxes paid. The edits were least effective in soliciting valid taxes paid, where validation was necessary in 9.5 percent of the cases for those who changed this field prior to selection, and in 11.4 percent of the cases for those who verified in response to a comment to this field pre-selection. (Section 5.4)

In summary, the edits appear to be working so effectively that validation is unnecessary in approximately 90 percent of the validation cases. These findings are, however, based on a recipient file which contained only 25 percent of all validation applicants. These data should be verified with a more complete recipient file, as well as an IRS study of validation applicants' records to determine whether data reported to BEOG are accurate or merely internally consistent.

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# STUDY OVERVIEW

## 1.1: Purpose and Scope

This is the final report of the Pre-Award Institution Validation Study (PAV), conducted for the Bureau of Student Financial Assistance (BSFA). In an effort to obtain more accurate data on Basic Grant applications, BSFA initiated three new program procedures in the 1978-79 academic year, which are:

- validation of certain application information for selected students by financial aid officers at postsecondary education institutions through the use of required documentation;
- tightening certain edits in the application processing system and adding new edits; and
- establishing a multiple data entry (MDE) procedure to allow applicants a choice among four application forms.

The PAV study focused on the first of these new procedures--the validation effort--to assess the extent of its impact on the proper award of Basic Grants. This report includes the results of analysis for Phase IV of the study, as well as a comparison of Phases I/II data replicated in Phase III. The Phases III/IV tables were run on the applicant data base as of the end of February, 1979.

In comparing the findings of the Phases III/IV analysis with those of Phases I/II, it should be remembered that the Phases I/II findings were most likely affected by the phased start-up of the validation effort; that is, that all components of the procedures had not been implemented

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by September 25, 1978--the cut-off for the applicant data base used to write the Phases I/II report. The particular factors suspected of influencing the Phases I/II findings were:

- the late publication of the regulations requiring the financial aid officers to validate;
- the late changes made to the amount of variance allowed between applicant - reported data and the data on the validation documentation - therefore, the possibility that earlier applications were validated based on less restrictive item tolerances than those applied to later applications; and
- the relatively late selection of many applicants for validation, due to a backlog in the corrections processing system; probably resulting in some applicants undergoing validation as late as September.

Because of these factors, the findings of Phases I/II and III/IV are not exactly comparable. However, the findings concerning corrections behavior in Phases I/II are, for the most part, substantiated by the Phases III/IV findings; thus, we can, with some certainty, assert trends. Where significant differences in the findings of the earlier and later phases have occurred, we have noted them in the appropriate sections.

Phase IV contains new analyses relating to questions raised by BSFA staff and by the Phases I/II analyses. These are discussed in the following section.

## 1.2: KEY STUDY OBJECTIVES AND ISSUES

The major study objectives guided the analysis for all Phases of this study. They were:

- To determine the relative efficacy of the pre-established criteria (PEC) in selecting students for validation who misreport data on their application;
- To determine whether there are conditions other than the PEC which more accurately predict students who misreport information;
- To determine the type and extent of corrections made by validation applicants after their selection for validation, and whether their corrections' behavior differs substantially from that of applicants not selected for validation; and

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- To determine the difference between what an applicant would have been paid based on the transaction at selection for validation, and the most current, post-validation transaction.

Several assumptions were required to conduct the analyses needed to address these objectives:

First, that validation was the only or chief intervening factor in students' corrections behavior after their selection; and

Second, that initial differences in the accuracy of data reported were not due to variable clarity in the type of application filed (CSS, ACT, BEOG, PHEAA).

To control for the possible influence of these factors on applicants' corrections behavior both prior to and following their selection for validation, we studied the possible effects of the new and tightened processing system edits as well as application source on applicants' eligibility status and corrections behavior. Since there was no concrete evidence of whether a particular application was actually validated, it was necessary to eliminate, to the extent possible, other explanations for validation applicants' corrections. The possible interaction between these factors and validation, as they appeared in the analytic output, are discussed specifically in the findings sections of this report.

As has been stated previously, Phase III included replication of selected Phases I/II tables. Phase IV dealt with new analyses suggested by BSFA staff and by the Phases I/II findings. It also included data on applicants expected to be paid since the recipient file was available for this phase of the study. The major issues explored, for the first time, in Phase IV include:

- Are there any new or better tolerances on existing criteria that can better predict misreporting than the existing PEC?
- Which of the current PEC result in the lowest participation rate, lowest awards, and greatest percent correcting post selection to their disadvantage?
- What are the best tolerance levels for validation fields?
- What is the comparative validity of data reported by field and by application source?

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- Are the processing system edits causing validation applicants to erroneously correct fields to their disadvantage?
- How many transactions did validation applicants have before and after selection? On which transactions were they paid? Did they have subsequent transactions?

The analyses related to these issues were directed toward the refinement of earlier analyses, especially those that suggested that some PEC were not selecting a significant number of misreporters and that there were interactive effects among the three new program procedures--the processing system edits, the new application sources, and validation.

1.3: STUDY POPULATION

The study population encompassed all Basic Grant applicants. For Phase IV, the applicant and recipient files were merged to allow analysis of expected payments[1/]. To facilitate the timeliness of data processing and to minimize expense, a ten percent random sample of the entire 3.7 million applicant data base was used. Population totals were produced by assigning the appropriate weights to each of the sampled applicant subgroups. The reliability of the sample approximates 100 percent due to the large sample size.

As of the end of February, 1979, the status of the Basic Grant applicants was as follows:

- 3,737,308 regular applicants whose status is:
  - .. 2,097,809 eligible applicants
  - .. 1,141,337 ineligible applicants
  - .. 498,162 rejected applicants
- 53,696 supplemental applicants.

Most of the analysis focused on characteristics of regular (nonsupplemental) applicants. The replicated tables are chiefly concerned with the currently or previously eligible applicants, while the Phase IV tables contain further analyses of rejected applicants as well.

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Four study groups were utilized for comparison purposes. They are referred to throughout this study as applicant subgroups and comprise:

- Nonvalidation applicants, for comparison with validation applicants;
- nonvalidation applicants meeting the PEC, for comparison with PEC validation applicants;
- randomly-selected validation applicants, for comparison with validation applicants selected according to the PEC; and
- randomly-selected validation applicants, for comparison with nonvalidation applicants not meeting any PEC.

The currently or previously eligible applicants are represented in the following comparison groups:

- 104,162 applicants selected according to PEC (about 5% of eligible population);[2/]
- 15,628 randomly-selected validation applicants (about 1% of the eligible population);
- 341,568 nonvalidation applicants who meet at least one PEC (16% of the eligible population); and
- 1,663,110 nonvalidation applicants who did not meet any of the PEC (79% of the eligible population).

The group consisting of PEC validation applicants was further subdivided into A, B, or C groups depending on the criteria they met, as follows:[3/]

- 82,522 PEC A applicants (these are people who met criteria relating to blank or seemingly erroneous data in one or more key fields);
- 15,303 PEC B applicants (these are people who established eligibility through one correction which substantially reduced their eligibility index); and
- 7,719 PEC C applicants (these are people who substantially reduce their eligibility index through one continuous string of transactions).

These figures demonstrate that validation applicants constitute a small proportion of the study group. The actual number of such applicants, however, is large enough to assess whether significant differences in characteristics and corrections behavior exist between validation and nonvalidation applicants.

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## 1.4: STUDY PROCEDURES

Most of the analyses for this report were conducted through the development of frequency distributions and bivariate contingency tables. Phase IV, however, also involved the conduct of discriminant and factor analyses which addressed the issue of determining better predictors of misreporting.

The Phase III tables were identical replications of the Phases I/II tables, but used the February applicant file, with one procedural exception--the method of counting applicants for selection according to the pre-established criteria. Phases I/II tables counted applicants each time they met a criterion but produced an unduplicated total for validation applicants. For the Phase III replications applicants were counted for the criteria they met up to selection for validation. Thus, if an applicant met a B and an A criterion before selection, s/he was counted twice; however, if an applicant met an A criterion before selection and a B criterion after selection, s/he was counted only in the A group. There are approximately three thousand validation applicants who met more than one PEC group criteria before selection. The validation applicant total is, however, unduplicated.

This new procedure for counting applicants resulted in a decrease in the number of applicants meeting criteria C2 and C3 from Phases I/II to Phase III. Therefore, the corrections behavior of PEC group C applicants is more accurately represented in Phase III, but not exactly comparable to that reported for Phases I/II. Specifications for the Phases I/II analyses were developed in July, 1978, and updated in September, 1978, and for Phases III/IV, in February, 1979. After review and approval by BSFA, these specifications were programmed and produced by Applied Management Sciences. Where appropriate, detailed discussions of methodological procedures and limitations pertaining to particular analyses are presented in the corresponding chapters.

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## 1.5: REPORT ORGANIZATION

Each of the remaining chapters addresses a major component of the 1978-79 Basic Grant application system. These components, each of which have been shown to have impact on applicants' corrections behavior, are treated in a separate chapter. They are:

- the pre-established criteria
- application source
- processing system edits
- validation of applications

The four factors which relate to the study objectives--selection for validation, corrections, eligibility index change and change in expected disbursement--are major components in each of the chapters. Each Chapter contains definitions of terms and analysis issues in the first section; general description of the pertinent population and comparison of data and findings across phases of this study in the middle sections; and findings of impact on applicants' eligibility indices as well as expected payment in the final section.

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1/Expected payment, as used in this report, refers to the entry of an amount in the expected disbursement line of the Student Eligibility Report. It indicates that the applicant has been paid or is expected to be paid that amount for a Basic Grant.

2/The "randomly" selected group was chosen by flagging every nth applicant. It is not truly random, however, because the selection ceilings were occasionally changed by OE, and because those who submitted corrections had multiple transactions (and thus a greater chance of selection). All applicants, therefore, did not have an equal probability of selection.

3/The total of the PEC A, B and C groups is larger than the PEC total because the group totals are not unduplicated for applicants who met criteria in more than one group prior to selection. The PEC total represents an unduplicated applicant total.

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## ADEQUACY OF THE PRE-ESTABLISHED CRITERIA
## CHAPTER 2 SUMMARY

The pre-established criteria were used to select 87 percent of the validation applicants; the other 13 percent were selected randomly. Three basic questions were answered in these analyses:

(1) Which of the pre-established criteria (PEC) are most effective in selecting potential misreporters (indicated by applicants making frequent and large corrections to critical data fields)?

(2) Do applicants selected according to the PEC reduce their award potential more frequently, and by larger amounts than randomly-selected applicants?

(3) Are there any conditions that are better indicators of misreporting than the existing PEC?

Our findings, with respect to these study questions, are as follows:

- Some of the PEC are more effective than others. By several indicators of effectiveness -- frequency of post selection (for validation) corrections, average effective eligibility index change after selection and average change in award due to post selection corrections--the following PEC proved most effective:
  - .. income and tax inconsistency (A6),
  - .. income and unusual expenses inconsistency (A3), and
  - .. portions earned and adjusted gross income (AGI) inconsistency (A2).
- -- The following PEC were least effective in all analyses:
  - .. missing household data (A1),
  - .. missing financial data (A7).

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-- Other analyses show that applicants with missing data tend, for the most part, not to be potential misreporters.

- In comparison with random selection, selection according to the PEC is much more effective as demonstrated by the following indicators:

| | PEC | RANDOM |
|---|---|---|
| % correcting since selection | 33% | 28% |
| $\bar{x}$ effective EI change | - | +62 |
| $\bar{x}$ change in expected payment (eligible) | - $22.96 | - $.9 |

This demonstrated that the PEC are more effective at detecting potential misreporting than random selection.

- Many new conditions were tested to determine if they produced applicants with more frequent and/or larger corrections than the existing PEC. With very few exceptions, the existing PEC proved to be better predictors of misreporting than the new conditions. Some refinements to the existing PEC did improve some criteria's predictive power, as follows:

  -- Applicants meeting certain combinations of criteria had larger and more frequent post selection corrections than those meeting any single criterion, particularly:

     .. those who met both the portions and AGI inconsistent criterion (A2) and income and taxes inconsistent criterion (A6), and

     .. those who met the portions and AGI inconsistent criterion (A2) and income and unusual expenses inconsistent criterion (A3).

     There were fairly large numbers of applicants meeting these combinations. Although few applicants met the following combinations, those who did, corrected to their disadvantage post selection with much greater than average frequency:

     .. those who met the income and tax inconsistent criterion (A6) and the applicant resources criterion (A9), and

     .. those who met the missing household data criterion (A1) as well as the income and tax inconsistent criterion (A6).

     OE might want to consider selecting applicants who meet these combinations of criteria with certainty.

     Other refinements to the existing criteria were suggested by the analyses:

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- modify the income and tax inconsistent criterion (A6) to exclude applicants with no farm or business assets, and
- modify the criteria relating to income, benefits and household size (A4 and A5) to include those with eligibility indices greater than zero (these are not effective criteria in their present form).

Some criteria proved to be most effective in their present form. These are:

- the income and unusual expenses inconsistent criterion (A3),
- the portions and AGI inconsistent criterion (A2),
- the combination of any A criterion with an unusually large number enrolled in postsecondary education, and
- the criteria relating to corrections behavior (the B and C criteria).

The remaining criteria were not successful by most indicators used, and variations did not improve them. These were:

- the missing household data criterion (A1),
- the missing financial data criterion (A7),
- the missing income data criterion (A8), and
- the applicant resources criterion (A9).

OE might consider eliminating these criteria from use for validation selection, unless applicants meet these criteria in combination with a more effective criterion.

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# 2

## ADEQUACY OF PRE-ESTABLISHED CRITERIA

### 2.1: BACKGROUND

Approximately six percent of the total 1978-79 Basic Grant applicant population was selected for validation, of which 87 percent was selected according to pre-established criteria (PEC) and 13 percent was selected randomly. (A caveat about the random selection process was stated in Chapter 1). The pre-established criteria were developed by the Bureau of Student Financial Assistance (BSFA) based on previous analyses that had indicated possible misreporting. BSFA also assigned different weights to the various pre-established criteria as well as individual "ceilings" on the number of applicants to be selected for each criterion. The PEC criteria consist of three groups: the A group concerns applicants who have been rejected for one of ten possible conditions, and who, through one or more corrections, have established eligibility; the B group relates to applicants who were previously ineligible, and who, through one correction, have significantly reduced their eligibility index; the C group contains previously eligible applicants who significantly reduce their highest eligibility index within one, continuous, official series of transactions. Each group also contains several sub-criteria. Appendix C contains an explanation of each of the PEC groups and their component sub-criteria. The table, on the following page, illustrates the number of applicants selected according to each of the PEC criteria, compared for Phases I/II (representing the applicant population through September 25, 1978) and for Phases III/IV (through the end of February, 1979).

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There are two reasons (other than the planned progression of the selection process) for the substantial differences between the Phases in the number selected who meet each criterion: first, as was discussed in Chapter 1, the method of counting applicants was changed for Phases III/IV to duplicate only those applicants who met more than one criterion before their selection (in Phases I/II applicants were counted within groups each time they met a criterion); and second, due to the initial backlog in the corrections processing system, applicants meeting certain criteria were selected later than others.

The first factor affects the number meeting criteria A6, A8, C2 and C3. Fewer applicants are shown meeting these criteria in Phases III/IV than in Phases I/II. This indicates that these are the criteria most often met by applicants after their selection for validation.

The second factor, variable selection dates, affects the number meeting criteria in Phases I/II. Since all of the PEC applicants had to submit at least one correction prior to selection, the majority of the PEC applicants were selected after August, 1978. The table on the following page illustrates the distribution of validation applicants according to dates of selection for validation.

Most of the applicants meeting the following criteria were selected latest (therefore, we would expect these criteria to show the largest gains): A1, A5, A6, A7, A8, A10, B1 and C1. A review of Table 2.1 shows that criteria A1, A5, A7, A10 and B1 and C1 do show gains; however, criteria A6 and A8 do not. This is probably due to the first factor—the method of counting--since these two criteria were shown to have been affected by that procedure. Nevertheless, both Phases show the largest number of PEC validation applicants to have met criteria A6 and A8, and the smallest number, B3 and C3.

The random applicants were selected to form a comparison group for the applicants selected according to the criteria. We attempted to determine whether the randomly-selected validation applicants were truly random with respect to meeting the pre-established criteria. To make

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TABLE 2.1: NUMBER OF VALIDATION APPLICANTS MEETING EACH PEC CRITERION, COMPARED FOR PHASES I/II AND III/IV[1]

| Validation Applicants | Phases I/II: No. Selected Who Meet Criteria[1] | Phases III/IV: No. Meeting Criteria Up to Selection |
|---|---|---|
| Total | 85,052 | 119,790[2] |
| PEC A | 71,430 | 82,522 |
| A1 | 5,056 | 8,015 |
| A2 | 13,288 | 14,140 |
| A3 | 9,403 | 10,534 |
| A4 | 10,157 | 15,424 |
| A5 | 10,086 | 15,366 |
| A6 | 22,665 | 22,559 |
| A7 | 10,731 | 11,660 |
| A8 | 21,293 | 20,933 |
| A9 | 878 | 1,730 |
| A10 | 351 | 474 |
| PEC B | 9,569 | 15,303 |
| B1 | 116 | 188 |
| B2 | 9,670 | 15,133 |
| B3 | 20 | 29 |
| PEC C | 7,307 | 7,719 |
| C1 | 1,066 | 1,757 |
| C2 | 6,730 | 5,988 |
| C3 | 22 | 11 |
| Random | 11,533 | 15,628 |

[1]The total number of validation applicants represents an unduplicated count; the PEC groups A, B, and C totals represent an unduplicated count of applicants meeting the individual criteria within the group; however, each group total also contains a duplicated count of applicants who met criteria in more than one PEC group before selection. Applicants meeting each criterion are counted for each criterion they meet before selection. Therefore, the detail contains some duplication while the total does not.

[2]This number differs slightly from that counted by the BEOG application processor; our number could be smaller due to the sampling weight applied to the actual number of applicants in our sample.

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TABLE 2.2: DISTRIBUTION OF VALIDATION APPLICANTS BY DATE OF SELECTION FOR VALIDATION

| Date of Selection | % Selected by This Date[1] | |
|---|---|---|
| | PEC | Random |
| PRIOR to 2/17 | 0% | 0% |
| 2/18 to 3/17 | 0 | 3 |
| 3/18 to 4/17 | 0 | 7 |
| 4/18 to 5/17 | 3 | 18 |
| 5/18 to 6/17 | 4 | 10 |
| 6/18 to 7/17 | 6 | 10 |
| 7/18 to 8/17 | 35 | 13 |
| AFTER 8/17 | 52 | 39 |

[1]/Each time interval contains mutually exclusive, rather than cumulative percentages.

this determination, we compared the percentages of randomly-selected validation applicants meeting each PEC with the percentages of nonvalidation applicants meeting each criterion. The results of this comparison allow us to conclude that the randomly-selected validation applicants are representative of the remainder of non-PEC applicants. Criterion C2 appeared suspect in Phases I/II; however, it is not in Phases III/IV. This apparent change can also be attributed to the new and more accurate Phase III method of counting applicants who meet criteria.

## 2.2: ANALYSIS ISSUES AND OPERATIONAL DEFINITIONS

The major issues for analysis related to the PEC are concerned with the conditions most likely to indicate misreporting. For analytic purposes this concern was divided into three chief issues:

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1. Which of the current PEC are met by applicants who have a high frequency of corrections and large changes to their eligibility indices resulting in decreased amounts of expected payment?

2. To what extent do PEC applicants meet multiple criteria? Which combinations are most frequently met? Do applicants who meet certain combinations of criteria submit more corrections than other applicants?

3. Are there alternative criteria or more or less restrictive criteria that predict misreporting better than the existing PEC?

To determine the adequacy of the pre-established criteria for detecting possible misreporting, several factors were considered instrumental:

- the percent of applicants selected according to each criterion who submitted corrections after their selection for validation;
- the percent of PEC applicants who submitted corrections to suspect fields;
- the average change to eligibility index resulting from corrections to critical fields; and
- the average change to expected disbursement resulting from eligibility index changes.

Each of these factors is defined and discussed below.

Applicants Submitting Corrections - It is expected that applicants selected for validation according to pre-established criteria will submit more corrections than other applicants because they met a condition which is expected to be indicative of misreporting. An analytic distinction is made between corrections submitted pre- and post applicants' selection for validation. This distinction is made for several reasons: (1) to separate the effects of the edit comments (printed on the SER by the processing agency, which, in many cases, instruct an applicant to confirm or change certain information contained in the application) from the effects of validation; (2) to separate corrections made by validation applicants prior to their selection (a condition for meeting the PEC is that corrections have previously been submitted) from those made after their selection, since the latter can be attributed, with more certainty, to validation; and (3) to separate applicants with multiple transactions from those with only one or two transactions. The distinction between corrections submitted pre- and post selection allows a comparison of changes to critical and suspect fields over time. We can determine the direction of the change (to applicant's advantage or disadvantage) and the net effect on the eligibility index.

Suspect Fields - are those for which the application data caused the applicant to be selected for validation. All of the A series pre-established criteria and criteria B3 and C3 were designed to



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elicit a correction to one or more suspect fields. As a point of reference, the following fields were defined as "suspect" relative to the selection criteria:

| | |
|---|---|
| Household Size (HS) | - A1, A4, A5, A6 |
| Post-high Enrollment (PHE) | - A10, B3, C3 |
| Applicant Resources (AR) | - A9 |
| Adjusted Gross Income (AGI) | - A2, A3, A4, A5, A6, A7, A8 |
| Taxes Paid (TP) | - A6, A7 |
| Nontaxable Income (NTI) | - A4, A5, A8 |
| Net Assets (NA) | - A3, A7 |
| Social Security Benefits (SSA) | - A4, A5 |
| Veteran's Benefits (VA) | - A4, A5 |
| Unusual Expenses (UE) | - A3 |

Critical Fields — Key data fields on the Basic Grant application which have major influence on the computation of the eligibility index are:

- Household Size (HS),
- Post-high Enrollment (PHE),
- Dependency Status,
- Adjusted Gross Income (AGI),
- Nontaxable Income (NTI),
- Net Assets (NA),
- Taxes Paid (TP),
- Applicant Resources (AR),
- Veteran's Educational Benefits (VEB),
- Unusual Expenses (medical/dental, casualty, fire/theft) (UE), and
- Unreimbursed Elementary and Secondary School Tuition (UT).

These data fields are subsequently referred to as "critical" (in the sense that they affect computation of the EI) fields. The abbreviations noted above are used throughout the report.

Eligibility Status and Eligibility Index - The eligibility index (EI) is calculated based on the information provided on the application. Ranges from 0 - 1600 qualify applicants for a Basic Grant. The lower the EI, the lower the expected contribution from the applicant and the higher the award amount. Award amounts for the same eligibility index may vary due to the student's enrollment status and the cost of



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education at the school selected by the applicant for attendance. Award amounts are never less than $200 and they may never exceed one-half the cost of education at the selected school. An applicant may be assigned any one of three eligibility statuses once the SER is processed -- eligible for an award, ineligible for an award (when the eligibility index is greater than 1600 points) or rejected (when the application was missing vital information or some key data fields contained inconsistent information). An applicant's eligibility status may change when corrections to the application are submitted. (Each time an application is sent back to the BEOG processor with corrections, a new transaction is recorded for that applicant; thus, the transactional history consists of eligibility index and status changes resulting from corrections.)

Expected Disbursement -- is the amount of award an applicant is due to receive, taking into account her/his enrollment status, and the cost of education at the institution to which s/he is applying. We refer to "expected" disbursement or payment throughout the report because the data on the recipient file is not validated until after the end of the academic year. However, we expect that expected disbursements are reasonable predictors for actual disbursements.

These are the variables which are used throughout this report to describe the corrections behavior of the 1978-79 Basic Grant applicants. The remainder of this Chapter addresses each of the three key analysis issues relative to the four factors indicative of possible misreporting.

## 2.3: ADEQUACY OF THE CURRENT PEC

The discussion that follows results from an internal analysis of the PEC, that is, comparing one current PEC to another current PEC. Section 2.5 compares the existing PEC with newly-developed criteria. The following bases for comparison are used:

- frequency of corrections post selection,
- ratio of the number of corrections to the number of applicants--corrections index,
- frequency of corrections to suspect fields,
- average eligibility index change, and
- average change in expected disbursement.

The tables that follow demonstrate the use of these factors for comparing the PEC criteria across Phases I/II and III/IV.

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The percent of PEC validation applicants submitting corrections since selection has more than doubled--from 14 to 36 percent. Criteria showing the greatest increase in the percent of applicants correcting are: A6, A2, A8, A7, A10 and B3. Perhaps this is partially due to the relatively late selection of applicants meeting these criteria. The replicated tables are based on an applicant file six months later than the Phases I/II tables. The only criterion subgroups showing a decrease in percent correcting are C2 and C3, a fact that can be explained by the extent of duplication in counting those who met A and C criteria in the Phases I/II tables. The PEC A group is submitting substantially more corrections than B or C groups, and, as a whole, shows the greatest increase in percent correcting as well as in multiple corrections (indicated by the corrections index). The most successful A criteria in terms of number of corrections per applicant and percent of applicants submitting corrections, using the most current data are: A2, A3, A6 and A10.

It can be seen that although the PEC applicants correct with greater frequency than the randomly-selected validation applicants, those meeting PEC B and C criteria correct only as frequently as the random group.

In terms of PEC applicants correcting suspect fields, the percentage has increased substantially from the earlier to the later data, as illustrated in the following table.

Criteria A6 and B3 are now fairly effective in corrections to suspect fields. Criteria A2, A3 and A10 continue to be effective in this regard. A9 has a consistently poor record in applicants correcting the only suspect field to which it relates -- applicant resources. A8 appears to be increasing in effectiveness, since 17.5 percent of applicants selected according to this criterion have corrected AGI. A1 continues to have a rather poor record, with only 7.5 percent of these applicants correcting household size.

The percentage of random applicants submitting post selection corrections has almost doubled from September to February, as has the number of corrections per applicant. Only the PEC A group is correcting more frequently than the random group.

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TABLE 2.3: POST-SELECTION CORRECTIONS BY CRITERION, PHASES I/II AND III/IV

| CRITERION GROUP | % CORRECTING[1] | | DIFFERENCE Phases III/IV Minus Phases I/II | CORRECTIONS[2] INDEX | | DIFFERENCE Phases III/IV Minus Phases I/II |
|---|---|---|---|---|---|---|
| | Phases I/II | Phases III/IV | | Phases I/II | Phases III/IV | |
| Validation Total | - 14 | 36 | +22 | | | |
| PEC A | 12 | 39 | +27 | 14 | 67 | +53 |
| A1 | 14 | 32 | +18 | 26 | 58 | +32 |
| A2 | 23 | 46 | +23 | 33 | 83 | +50 |
| A3 | 21 | 42 | +21 | 28 | 73 | +45 |
| A4 | 17 | 34 | +17 | 18 | 57 | +39 |
| A5 | 17 | 34 | +17 | 18 | 57 | +39 |
| A6 | 15 | 50 | +35 | 18 | 89 | +71 |
| A7 | 14 | 36 | +22 | 19 | 63 | +44 |
| A8 | 12 | 35 | +23 | 13 | 58 | +45 |
| A9 | 13 | 32 | +19 | 16 | 50 | +34 |
| A10 | 20 | 45 | +25 | 37 | 100 | +63 |
| PEC B | 11 | 29 | +18 | 17 | 46 | +29 |
| B1 | 9 | 28 | +19 | 9 | 51 | +42 |
| B2 | 13 | 29 | +16 | 18 | 46 | +28 |
| B3 | 0 | 45 | +45 | 0 | 100 | +100 |
| PEC C | 42 | 28 | -14 | 55 | 42 | -13 |
| C1 | 8 | 28 | +20 | 9 | 43 | +34 |
| C2 | 52 | 28 | -24 | 73 | 42 | -31 |
| C3 | 64 | 18 | -46 | 100 | 55 | -45 |
| Random | 15 | 28 | +13 | 23 | 43 | +20 |

[1] PEC group percentages are based on unduplicated applicant totals within, but not between, groups.

[2] Ratio of total number of corrections to number of applicants.



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TABLE 2.4: PERCENTAGES OF APPLICANTS CORRECTING SUSPECT FIELDS, PHASES I/II AND III/IV

HIGHEST % CORRECTING SUSPECT FIELDS

| Phases I/II | | Phases III/IV | |
|---|---|---|---|
| Criteria | % | Criteria | % |
| A 10 | (10.5 - PHE) | A6 | (36.4 - TP) |
| A 2 | (13.9 - AGI) | B3 | (34.5 - PHE) |
| A 3 | (11.5 - AGI) | A2 | (33.3 - AGI) |
| | | A10 | (29.1 - PHE) |
| | | A3 | (27.9 - AGI) |
| | | A6 | (25.2 - AGI) |

LOWEST % CORRECTING SUSPECT FIELDS

| Phases I/II | | Phases III/IV | |
|---|---|---|---|
| Criteria | % | Criteria | % |
| A9 | (1.5 - AR) | A4, 5 | (1.3 - SSA) |
| | | A4, 5 | (1.5 - VEB) |
| | | A9 | (1.7 - AR) |
| | | A3 | (3.3 - NA) |
| | | A7 | (3.7 - NA) |
| | | A6 | (5.2 - HS) |

In addition to the percentage of applicants correcting, the average change to the field, resulting in change to the eligibility index, is an important indicator of the effectiveness of a criterion. Table 2.5 shows the average absolute and effective eligibility index changes resulting from post selection corrections of each criterion group.

Each of the A criterion groups show larger effective EI changes in Phases III/IV than in Phases I/II. The same is true for absolute EI changes, except A6, which shows smaller change with the later data. This is probably due to the fact that fewer applicants are meeting A6 under

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TABLE 2.5: ABSOLUTE AND EFFECTIVE ELIGIBILITY INDEX CHANGES FOR APPLICANTS SUBMITTING POST SELECTION CORRECTIONS, PHASES I/II AND III/IV

| CRITERION GROUP | AVERAGE ABSOLUTE EI CHANGE[1] | | AVERAGE EFFECTIVE EI CHANGE[2] | |
|---|---|---|---|---|
| | Phases I/II | Phases III/IV | Phases I/II | Phases III/IV |
| A1 | 84 | 138 | 42 | 62 |
| A2 | 704 | 802 | 439 | 504 |
| A3 | 613 | 665 | 372 | 418 |
| A4 | 59 | 127 | 41 | 89 |
| A5 | 52 | 127 | 39 | 89 |
| A6 | 612 | 585 | 374 | 386 |
| A7 | 19 | 77 | -3 | 20 |
| A8 | 36 | 65 | 7 | 28 |
| A9 | 61 | 133 | 17 | 85 |
| A10 | 27 | 111 | 27 | 97 |
| B1 | 124 | -35 | 124 | -52 |
| B2 | 154 | 202 | 91 | 116 |
| B3 | 0 | 135 | 0 | 135 |
| C1 | 96 | 89 | 93 | 83 |
| C2 | 150 | 160 | 147 | 148 |
| C3 | 51 | 131 | 51 | 131 |
| RANDOM | 131 | 114 | 62 | 62 |

[1] Absolute change refers to net point change.

[2] Effective change refers to the actual point change if eligibility indices above 1600 are set at 1600. For example, the absolute change for an applicant whose eligibility index goes from 500 to 2200 is 1700; the effective change is 1100 or 1600-500.



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the new method of counting applicants. Applicants meeting the B criteria seem to be reversing their behaviors; B1 applicants are now making changes to their advantage, thus, decreasing their EIs, whereas B3 applicants have moved from average changes of 0 to +135. It should be remembered that the B3 and B1 groups are very small--only 29 and 188 applicants, respectively, and that the B group consists of previously ineligible applicants. Therefore, it would appear that the B1 applicants are attempting to increase their eligibility index, while the B2 and B3 groups are not able to do so. The C criterion groups are behaving similarly across Phases. The most notable difference is the fairly large average increase in eligibility index for the C3 group. However, this is the smallest criterion group of all, with only 11 applicants. There are fewer applicants shown as meeting C3 in Phases III/IV than in Phases I/II due to the new counting procedure. This probably accounts for the rise in average EI change for that group. The EI change for the random group has remained constant across the Phases. The random group now exhibits larger effective EI changes after selection than applicants meeting criteria A1, A7, A8 and B1.

Table 2.6 summarizes and compares the findings from Phases I/II and III/IV regarding the most and least successful criteria.

TABLE 2.6: COMPARISON OF FINDINGS ON ADEQUACY OF CRITERIA FOR PHASES I/II AND PHASES III/IV

| Judgment Criterion | PHASES I/II | PHASES III/IV |
|---|---|---|
| | Most Successful | Most Successful |
| % Correcting since selection | C3 - 64% | A6 - 50% |
| | C2 - 52 | A2 - 46 |
| | A2 - 23 | B3 - 45 |
| | A3 - 21 | A10 - 45 |
| | A10 - 20 | A3 - 42 |

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TABLE 2.6: (Continued)

| | | Least Successful | Least Successful |
|---|---|---|---|
| | | B criteria overall - 11% | C criteria overall - 28% |
| | | A8 - 12 | B criteria overall - 29 |
| | | A9 - 13 | A1 - 32 |
| | | A7 - 14 | A9 - 32 |
| | | A1 - 14 | A4&A5 - 34 |
| | | **Most Successful** | **Most Successful** |
| Corrections index since selection | | C3 - 100 | A10 - 100 |
| | | C2 - 73 | B3 - 100 |
| | | A10 - 37 | A6 - 89 |
| | | A2 - 33 | A2 - 83 |
| | | A1 - 26 | |
| | | **Least Successful** | **Least Successful** |
| | C1 & | B1 - 9 | C2 - 42 |
| | | A8 - 13 | C1 - 43 |
| | | A9 - 16 | B2 - 46 |
| | A4,5,6,& | B2 - 18 | A9 - 50 |
| | | A7 - 19 | B1 - 51 |
| | | **Most Successful** | **Most Successful** |
| Effective eligibility index change | | A2 - +439 | A2 - +504 |
| | | A6 - +374 | A3 - +418 |
| | | A3 - +372 | A6 - +386 |
| | | C2 - +147 | C2 - +148 |
| | | B1 - +124 | B3 - +135 |
| | | **Least Successful** | **Least Successful** |
| | | A7 - -3 | B1 - -52 |
| | | A8 - +7 | A7 - +20 |
| | | A9 - +17 | A8 - +28 |
| | | A10 - +27 | A1 - +62 |

The following conclusions can be drawn from the preceding tables:

CONCLUSION #1: A2, A3, A6 and A10 are the most successful A criteria in terms of percent correcting and multiple corrections. A1, A9, A4 and A5 continue to be relatively unsuccessful criteria. Applicants meeting criteria A1, A7 and A8 have eligibility index changes which are lower than those made by the random group.

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CONCLUSION #2: The C criteria appear relatively unsuccessful. Among those who do submit post-selection corrections, however, C2 applicants have fairly large EI changes.

CONCLUSION #3: Only criterion B3 in the B group currently appears to be successful. These are applicants who were previously ineligible and become eligible with one correction causing an eligibility index reduction of more than 400 points and who also had reported number in the family enrolled in postsecondary institutions as greater than 5. B3 applicants have, rather frequently, submitted post-selection corrections.

In Phase IV we were able to obtain data on average estimated payment (expected disbursement) by criterion group. The following table illustrates the difference between expected payment at selection and at the current transaction for validation applicants. This difference is multiplied by the number of currently eligible applicants to obtain an "estimated savings" for each criterion group. These data are shown both for those who are expected to be paid (i.e., on the recipient file) and for those not yet on the recipient file. The lowest values on this table reflect the greatest savings, since they are indicative of decreased expected payments. The reader should be aware that only 25 percent (or 3,354 applicants) of all validation applicants were on the recipient file as of the end of February, 1979, the data base used in these analyses.

Table 2.7 shows that most validation applicants are reducing their potential awards substantially. It is also reasonable to expect that some of the currently eligible applicants not yet on the recipient file will not succeed in obtaining an award, though the proportion of applicants for which payment is unlikely cannot be estimated at this time. For those not yet on the recipient file the greatest potential reductions in award potential occurred for applicants meeting criteria C3, A2, A6, B3 and A3.

Random applicants not yet on the recipient file are also slightly reducing their potential awards after selection. These applicants, on the average, have greater reductions to potential award than those meeting criteria A1, A8 and B1.

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TABLE 2.7: ESTIMATED DOLLAR SAVINGS FOR CURRENTLY ELIGIBLE VALIDATION APPLICANTS, DUE TO LOWER CURRENT EXPECTED PAYMENT THAN AT SELECTION

| CRITERION | NOT (YET) ON RECIPIENT FILE | | EXPECTED TO BE PAID | |
|---|---|---|---|---|
| | $\bar{X}$ $ DIFFERENCE BETWEEN SELECTION AND CURRENT TRANSACTION1/ | ESTIMATED SAVINGS | $\bar{X}$ $ DIFFERENCE BETWEEN SELECTION AND PAYMENT TRANSACTION1/ | ESTIMATED SAVINGS |
| TOTAL VALIDATION | $-12.9 | $-1,088,063 | $- 17.5 | $-523,022 |
| PEC A | -15.2 | - 884,685 | - 13.1 | -258,777 |
| A1 | + .3 | + 1,855 | + 2.7 | + 3,950 |
| A2 | -50.2 | - 433,426 | - 47.3 | -177,043 |
| A3 | -36.7 | - 238,880 | - 27.1 | - 81,408 |
| A4 | - 7.5 | - 89,220 | - 2.9 | - 8,598 |
| A5 | - 7.5 | - 88,852 | - 2.9 | - 8,566 |
| A6 | -47.5 | - 724,660 | - 41.1 | -199,211 |
| A7 | + 3.7 | + 30,010 | + 5.7 | + 17,242 |
| A8 | 0 | 0 | - .5 | - 2,877 |
| A9 | - 8.6 | - 10,999 | - 42.9 | - 15,787 |
| A10 | -10.9 | - 3,891 | - 4.2 | - 382 |
| PEC B | - 8.8 | - 97,345 | - 8.1 | - 30,634 |
| B1 | + 3.1 | + 437 | - 22.5 | - 900 |
| B2 | - 9.0 | - 98,307 | - 8.0 | - 29,976 |
| B3 | -32.1 | - 674 | + 4.0 | + 28 |
| PEC C | -18.1 | - 93,088 | -112.1 | -276,214 |
| C1 | -10.7 | - 12,390 | - 89.2 | - 49,506 |
| C2 | -20.2 | - 80,537 | -118.5 | -227,283 |
| C3 | -41.7 | - 375 | 0 | 0 |
| RANDOM | - 2.0 | - 21,823 | - .9 | - 3,844 |

1/Difference is calculated by subtracting estimated payment at selection from expected payment; therefore, a negative value indicates a potential savings to OE.

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Validation may be resulting in some applicants being paid more than if they had been paid prior to selection. Increases in expected payments are occurring for applicants meeting criteria A1, A7, B1, all having to do with blank or missing data (except B1, which relates to the effect of corrections on EI). It may be that students meeting these criteria have not been able to successfully complete their applications and have been aided in this process by validation. Additionally, applicants meeting criteria A4, A5, A1 and A10 have low rates of recipient status--from 18-21 percent--compared to an average for all validation applicants of 25 percent. Applicants meeting A10 also have the highest current rejection rate among A group validation applications; in fact 5.2 percent of the A10 applicants who are expected to be paid are currently rejected. (This means they were either paid on an earlier transaction or paid while rejected). For those who are on the recipient file, the criterion groups for which applicants have the greatest decreases in expected payment are: C2, C1, B1, A9, A6 and A2. Random applicants who have attained recipient status tend to reduce their award potential by a smaller amount than those who are not yet on the file; a characteristic that differs from the applicants meeting the PEC. Even so, the random group reduces award potential by a greater amount than those meeting criteria A1, A7, A8, B3 and C3.

We also note that there were 4,132 validation applicants who became ineligible after their selection for validation. The total amount of the expected payment based on these applicants' eligibility indices at selection can be considered a savings to OE in the sense that they are currently ineligible for Basic Grants. Table 2.8 which follows, shows the number of applicants in this category by PEC criterion, the average expected payment at selection and the total savings in award amounts obtained by multiplying the number of applicants by the average expected payment at selection.

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TABLE 2.8: ESTIMATED SAVINGS FOR VALIDATION APPLICANTS WHO BECAME INELIGIBLE AFTER SELECTION

| CRITERION | # CURRENTLY INELIGIBLE NOT ON RECIPIENT FILE | MEAN EXPECTED PAYMENT AT SELECTION | TOTAL $ SAVINGS[1/] |
|---|---|---|---|
| TOTAL VALIDATION | 3,085 | 760.6 | $ 2,346,451 |
| PEC A | 2,583 | 779.3 | 2,012,931 |
| A1 | 156 | 629.1 | 98,124 |
| A2 | 1,285 | 963.3 | 1,237,840 |
| A3 | 683 | 1053.8 | 719,745 |
| A4 | 113 | 947.5 | 107,067 |
| A5 | 114 | 947.5 | 108,015 |
| A6 | 1,696 | 849.8 | 1,441,260 |
| A7 | 244 | 537.4 | 131,125 |
| A8 | 309 | 503.2 | 155,488 |
| A9 | 39 | 428.0 | 16,692 |
| A10 | 7 | 577.0 | 4,039 |
| PEC B | 259 | 735.8 | 190,572 |
| B1 | 5 | 529.0 | 2,645 |
| B2 | 255 | 739.9 | 188,674 |
| B3 | 0 | 0 | 0 |
| PEC C | 34 | 641.7 | 21,817 |
| C1 | 10 | 472.9 | 4,729 |
| C2 | 24 | 712.0 | 17,088 |
| C3 | 0 | 0 | 0 |
| RANDOM | 218 | 576.9 | 125,764 |

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CONCLUSION #4: These data lend further support to the contention that the best criteria, by most standards, are A2, A3 and A6.

## 2.4: APPLICANTS MEETING MULTIPLE CRITERIA

The majority of applicants selected according to PEC meet only one PEC criterion. However, applicants who first meet certain criteria meet more than one criterion with greater frequency than applicants who first meet other criteria, as the following table demonstrates:

TABLE 2.9: PERCENT OF APPLICANTS MEETING MULTIPLE CRITERIA, BY FIRST CRITERION MET

| CRITERION | TOTAL # FIRST MET | % MEET ONLY THIS CRITERION | % MEET THIS PLUS ONE OTHER CRITERION | % MEET THIS PLUS TWO OR MORE OTHER CRITERIA |
|---|---|---|---|---|
| A1 | 7,978 | 42.50% | 52.06% | 5.44% |
| A2 | 13,628 | .01 | 84.25 | 15.74 |
| A3 | 2,223 | .00 | 10.08 | 89.92 |
| A4 | 12,989 | .41 | 98.30 | 1.29 |
| A5 | 0 | --- | --- | --- |
| A6 | 15,945 | 98.97 | 1.02 | .01 |
| A7 | 7,859 | 97.94 | 2.05 | .01 |
| A8 | 20,349 | 98.11 | 1.88 | .01 |
| A9 | 1,547 | 99.87 | .13 | .00 |
| A10 | 0 | --- | --- | --- |
| B1 | 186 | 93.54 | 6.46 | .00 |
| B2 | 15,048 | 99.48 | .52 | .00 |
| B3 | 0 | --- | --- | --- |
| C1 | 1,460 | 99.45 | .55 | .00 |
| C2 | 4,950 | 99.83 | .17 | .00 |
| C3 | 0 | --- | --- | --- |

This table shows that more than 90 percent of applicants who first meet criteria A6, A7, A8, A9, B1, B2, C1, or C2, meet no other criteria. The reverse is the case, however, for applicants who first meet criteria A1, A2, A3, or A4. The majority of these applicants meet at least one

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other criterion. The following combinations are most often met by applicants meeting two criteria and three or more criteria (listed with the first met criterion first).

TABLE 2.10: MOST FREQUENTLY OCCURRING COMBINATIONS OF CRITERIA, BY FIRST CRITERIA MET

| CRITERIA FREQUENTLY MET IN COMBINATION | % OF THOSE WHO FIRST MEET ONE CRITERIA WHO ALSO MEET THE OTHER(S) |
|---|---|
| **APPLICANTS MEETING ONLY TWO CRITERIA** | |
| A2 with A3 | 44.7% |
| A1 with A7 | 42.5 |
| A2 with A6 | 30.0 |
| A3 with A6 | 7.3 |
| **APPLICANTS MEETING THREE OR MORE CRITERIA[1/]** | |
| A3 with A4 & A5 | 89.9% |
| A2 with A3 & A6 | 15.5 |
| A1 with A4 & A5 | 4.6 |

1/ Percentages are derived by dividing the lowest number meeting the second or third criterion by the total number first meeting the first criterion.

This table shows that applicants who first meet criteria A2 or A3 are more likely than other applicants to meet multiple criteria. Those who meet A2 also tend to meet A3 and A6, while initial A3 applicants are highly likely to meet A4 and A5. Some A2 and A3 applicants also meet all of the other A criteria, as well as B and C criteria, while this is not the case for other A criteria. Since the method of comparing criteria for effectiveness is based on the number who first met a criterion prior to selection, it appears as though A2 and A3 applicants, who meet multiple criteria most often, are accounting for the corrections that might otherwise be attributed to other criteria, such as A4 and A5. Had more applicants met A4 prior to meeting A3, corrections now attributed to the A3 group would be attributed to A4. Another way of stating this is

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that the use of criteria A2 and A3 appears to obviate the need for A1, A4, A5 and, perhaps A7. A look at the post selection corrections behavior of applicants meeting multiple criteria substantiates this conclusion; as the following table shows:

TABLE 2.11: APPLICANTS MEETING MULTIPLE CRITERIA WHO HAVE FREQUENT POST SELECTION CORRECTIONS WHICH REDUCE AWARD POTENTIAL

| CRITERIA MET | % CORRECTING POST SELECTION | % CORRECTING TO THEIR DISADVANTAGE POST SELECTION | NUMBER WHO MEET THESE CRITERIA |
|---|---|---|---|
| TWO ONLY | | | |
| A2 & A6 | 55.2% | 41.3% | 4,085 |
| A6 & A9 | 50.0 | 33.9 | 56 |
| A6 & C2 | 32.3 | 19.3 | 31 |
| THREE OR MORE | | | |
| A2, A6 + ... | 57.7 | 48.9 | 2,097 |
| A2, A3 + ... | 57.5 | 48.4 | 2,122 |
| A1, A6 + ... | 53.8 | 38.5 | 26 |

The results of this analysis indicate that applicants who first meet A2 and then meet A6 or A3 have a higher rate of post selection corrections to their disadvantage than those who meet A9. This suggests that selection of applicants who meet the above-mentioned criteria in that order would be more effective than selecting applicants who meet these criteria alone. OE might consider refining the selection criteria to select all applicants who first meet A2 then meet A6 or A3, and who first meet A6 then meet A9.

## 2.5: POTENTIAL EFFICACY OF NEW OR REFINED PEC

In order to address the study objective concerned with the relative efficacy of the PEC, we hypothesized and tested new PEC and refinements of the existing PEC (more or less restrictive). These hypotheses were developed based on the results of analyses for Phases I/II and ensuing



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discussions with BSFA. The new and refined PEC were developed and tested using two different methodological approaches. The first approach was a predictive approach to the generation of conditions which indicate misreporting, based on applicants who submit post selection corrections which have the effect of increasing their eligibility indices by at least 100 points. The statistical procedure used was a discriminant analysis, a method which classifies applicants into one or more groups, based on the existence of prior conditions (e.g., previous rejection, no mother's portion present, etc.). The results of this analysis are discussed in Appendix A. It is worth noting that fewer than 10 percent of all random validation applicants are shown, in the discriminant analysis, to be misreporters (those with an eligibility index increase post selection of more than 100 points). This indicates an overall decline in the percentage of eligible misreporters shown in the 1976-77 and 1974-75 IRS studies, as 22.8 and 16.5 percent of the applicant population, respectively.

The second approach to determining whether conditions other than the current PEC could more accurately predict misreporting involved testing hypotheses about new or refined PEC by running bivariate contingency tables of conditions by frequency met, frequency of post selection corrections and average eligibility index changes. The results of that analysis are presented here.

The criteria tested related to the following:

- portions exceeding AGI
- unusual expenses exceeding itemized deductions, income or a maximum dollar amount
- PHE exceeding household size or exemptions
- various ranges of EI change
- combinations of household size, income and Social Security and veteran's benefits
- missing identification data such as Social Security number, signature, etc.
- unreimbursed tuition exceeding income, or increased
- applicant resources and Social Security benefits decreased

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- -- year in school
- -- citizenship status
- -- recipient level
- -- EI = to or > 0 and negative income
- -- various combinations of income and tax inconsistencies, with farm and business assets and marital status
- -- combinations of assumed PHE and A10, B3 and C3

All in all, there were 57 new or refined PEC tested in this analysis. The most successful criteria can be judged by the percent correcting pre and post selection and the eligibility index changes resulting from those corrections. We compared the existing PEC and the refinements tested in this analysis, based on these indicators of success. The table on the following page summarizes the results of this comparison.

Summarizing the results of the analyses, we can draw several conclusions:

CONCLUSION #5: Four identification fields - SSN, citizenship status, recipient level and application signature - appear among the most frequently corrected fields pre selection; none obviously result in EI changes. Year in school, however, does result in significant EI changes post selection, probably as due to changes in status from eligible to rejected. The current edits relating to year in school should be retained.

CONCLUSION #6: Applicants meeting the income and tax inconsistency criterion are submitting corrections with the greatest frequency both pre and post selection. The EI changes resulting from pre selection corrections by these applicants are not large; post selection, the EI changes are fairly significant. These changes are highest for those meeting the $300 inconsistency criteria, and decrease somewhat as percentages are added to the dollar amount in this criterion. The current rejection rates for applicants with a $400 or greater inconsistency, however, are high, particularly for those exceeding the 60 percent limit. Additionally, modifying A6 by farm or business assets and marital status, shows that having no farm or business assets and being married or single tends to result in more frequent post selection corrections and greater EI increases. This is probably indicative of independent applicant status. Thus, A6 should be

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TABLE 2.12: COMPARISON OF EXISTING PEC AND REFINEMENT FOR POST SELECTION CORRECTIONS AND EI CHANGES

| CRITERIA | | POST SELECTION # Who Met This Criterion After Selection | % Correcting | $\bar{X}$ Effective EI Change |
|---|---|---|---|---|
| A1: | Existing | | 32% | + 62 |
| New: | Exemptions ≠ HS, Parents Age < 65 Marital Status Single, Independent | 724 | 22 | + 23 |
| | PHE > 2 | 3 | 66 | -394 |
| A2: | Existing | | 46% | +504 |
| New: | Portions > AGI by 50% | -164 | 74 | - 7 |
| | Portions > AGI by 30% | 184 | 72 | - 6 |
| | Portions > AGI + itemized deductions | 282 | 72 | + 12 |
| A3: | Existing | | 42% | +418 |
| New | UE = 120% of income OR $6000 | 55 | 82 | -155 |
| | UE > itemized deduction | 1340 | 17 | + 21 |
| A4 & A5: | Existing | | 34% | + 89 |
| | Meets A4 & A5, negative income | 0 | 0 | 0 |
| | Meets A4 & A5, not negative income | 144 | 64 | +225 |
| | Meets A4 & A5, EI > 0 | 44 | 80 | +572 |
| | Meets A4 & A5, EI = 0 | 92 | 61 | - 1 |
| A6: | Existing: | | 50% | +386 |
| | A6 + farm assets present | 2 | 50 | - 72 |
| | A6 + business assets | 11 | 82 | + 51 |
| | A6 + no farm or business assets | 184 | 91 | +321 |
| | A6 + divorced, widowed, or deceased | 55 | 91 | +141 |
| | A6 and married or single | 122 | 90 | +378 |

(continued)



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TABLE 2.12: (Continued)

| | | | | |
|---|---|---|---|---|
| | A6, no farm or business assets, married or single | 111 | 01 | +408 |
| | Reported tax (RT) > computed tax (CT) by $300 at selection | 203 | 80 | +125 |
| | Reported tax > computed tax by $300 at selection and 50% | 146 | 80 | +103 |
| | Reported tax > computed tax by $300 at selection and 60% | 128 | 80 | +109 |
| | RT > CT @ S by $300 and 70% | 120 | 80 | + 84 |
| | RT > CT @ S by $400 | 147 | 80 | +104 |
| | RT > CT @ S by $400 and 50% | 113 | 80 | + 89 |
| | RT > CT @ S by $400 and 60% | 97 | 80 | + 96 |
| | RT > CT @ S by $400 and 70% | 91 | 80 | + 62 |
| | RT > CT @ S by $500 | 115 | 83 | + 91 |
| | RT > CT @ S by $500 and 50% | 92 | 84 | + 81 |
| | RT > CT @ S by $500 and 60% | 77 | 84 | + 87 |
| | RT > CT @ S by $500 and 70% | 71 | 84 | + 43 |
| A9: | Existing | | 32% | + 85 |
| New | AR decreased and SSA decreased | 20 | 90 | -306 |
| | UT increased by $500 and AR decreased by $500 | 0 | 0 | 0 |
| A10: | Existing: | | 45 | + 97 |
| New: | PHE > 5, ≠ HS | 4 | 50 | + 91 |
| | PHE > 4, ≠ HS | 13 | 31 | + 47 |
| | PHE > Exemptions, ≠ HS | 52 | 25 | -124 |
| | Meets A10 and no assumed PHE | 0 | 0 | 0 |
| | A10 and correct assumed PHE | 0 | 0 | 0 |
| | A10 and don't correct assumed PHE | 0 | 0 | 0 |
| B1: | Existing: | | 28% | - 52 |
| New: | EI change between 200-400 points | 2 | 0 | 0 |
| B2 | Existing: | | 29% | +116 |
| New: | EI change between 300-500 points | 1 | 0 | 0 |
| B3 | Existing: | | 45% | +135 |
| New: | B3 and no assumed PHE | 0 | 0 | 0 |
| | B3 and correct assumed PHE | 0 | 0 | 0 |
| | B3 and don't correct assumed PHE | 0 | 0 | 0 |
| C3: | Existing: | | 18% | +131 |
| New: | C3 and no assumed PHE | 0 | 0 | 0 |
| | C3 and correct assumed PHE | 0 | 0 | 0 |
| | C3 and don't correct assumed PHE | 0 | 0 | 0 |

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modified to exclude those with farm or business assets and the percentage limitation on exceeding computed taxes should be dropped, while the $300 limit should be retained.

CONCLUSION #7: Unusual expenses exceeding income continues to be a successful criterion. In this analysis, variations on the current criterion were introduced. Although the percent correcting both pre and post selection remains high, the EI changes post selection become insignificant with these modifications. We recommend retaining the present A3 criterion in its existing form.

CONCLUSION #8: The current A4 and A5 criterion, if modified by the addition of EI > 0, figure significantly in post selection corrections and EI changes; in fact it is the most significant of the 57 changes analyzed, in terms of EI changes post selection.

CONCLUSION #9: Adjustments to criterion A2, portions exceeding AGI, produced no significant post selection corrections or EI changes. Therefore, this criterion should be retained in its present form.

CONCLUSION #10: The random group consistently makes larger and more frequent post selection corrections than applicants meeting criteria A1, A7, A8 and B1. Random selection is also more effective in predicting potential misreporting than applicants meeting criteria B3 and C3 when reductions in award potential after selection are considered.

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## APPLICATION SOURCE
## CHAPTER 3 SUMMARY

One of the new program procedures instituted by the Bureau of Student Financial Assistance for the 1978-79 academic year was the introduction of an option for applicants to choose among four sources to apply for a Basic Grant where in previous years only the BEOG application was available. These sources of applications were: the Basic Education Opportunity Grant (BEOG), the American College Testing Program (ACT), the College Scholarship Service (CSS) and the Pennsylvania Higher Education Assistance Agency (PHEAA).

Our analyses focused on and determined whether there were differences in applicants corrections behavior and award status depending on the source of the application. Major findings of these analyses are highlighted below:

- The distribution of validation applicants by application source is not the same as the distribution by application source in the population. BEOG filers are underrepresented among validation applicants, and CSS filers are overrepresented. This suggests that some feature of the CSS application or its process or some common characteristic of CSS applicants is correlated with the validation selection criteria.
- BEOG filers, on the average, tend to have the lowest income and to remain in rejection status longer than filers from other sources. This indicated that certain processing system edits are excluding lower income applicants from receiving an award.
- PHEAA filers tend to have the highest incomes; consequently about half of these applicants become ineligible after rejection by the edits.

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- The same A criteria are effective regardless of application source--the income and tax inconsistent criterion (A6), the income and unusual expenses criterion (A3) and the portions and AGI inconsistent criterion (A2). However, certain additional criteria are successful for different application sources, as follows:

  -- for ACT filers:

     .. two corrections behavior criteria (B3 and C3), and

     .. an A criterion in combination with an unusually large number enrolled in post secondary education (A10).

  -- for CSS filers:

     .. one corrections behavior criterion (B3).

  -- for PHEAA filers:

     .. one corrections behavior criterion (B1).

  OE might want to consider selecting applicants for validation variously by application source.

- There is some slight variation in the frequency of valid data fields prior to, and at selection for validation by application source, as follows:

  -- ACT filers tend to have valid data fields, both prior to and at selection, slightly more often than those filing from other sources.

  -- BEOG filers tend to be least accurate at selection, but make the smallest average changes after selection.

  -- CSS and PHEAA filers tend to be least accurate prior to their selection for validation.

- There is little variation by application source in the fields most and least often valid at selection, with number enrolled in postsecondary education being most often valid and adjusted gross income being least often valid at selection.

- In terms of the average change in expected payment between the selection and payment transactions, there were notable differences by application source of the following types:

  -- both for applicants who were and were not on the recipient file as of the end of February, 1979, PHEAA filers tend to reduce their award potential after selection by the largest amount; BEOG filers, on the other hand, tend to make the smallest average changes; and

  -- although BEOG filers had more occurrences of invalid data at selection, the data indicate that they were not inaccurate by large amounts.



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In general these analyses indicate that CSS and PHEAA applicants, who experienced disproportionate rates of rejection, primarily for missing data, are able to successfully re-enter the application processing system more frequently than rejected BEOG applicants, who tend to have lower incomes. The data further suggest that CSS and PHEAA applicants may have experienced more initial difficulty in supplying the required data for calculation of an eligibility index, due to ambiguity in the application forms themselves. The processing system edits appear to clarify the requirements for more data. BEOG applicants, on the other hand, appear to be rejected more frequently for seemingly inconsistent rather than missing data. Since their changes after selection for validation are comparatively small, their problems would appear to be attributable more to lack of understanding about the data requirements, rather than to intentional misreporting.



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# 3

## APPLICATION SOURCE

### 3.1: BACKGROUND

One of the new program procedures initiated in the 1978-79 academic year was the addition of three satellite processors in the multiple data entry system--the American College Testing Program (ACT), the College Scholarship Service (CSS) and the Pennsylvania Higher Education Assistance Agency (PHEAA)--to the regular source for a Basic Grant Application (BEOG). Since each of the application forms is different in design as well as content, we analyzed corrections behaviors, eligibility status changes, and expected payment for students applying through each source.

Table 3.1 shows the distribution of all applicants and validation applicants by application source, compared for Phases I/II and III/IV. Comparing the data on representation in the population by application source for Phases I/II and Phases III/IV, we note that there are several changes. First, the percent applying from each source has changed somewhat, with that of the BEOG applicants increasing, and the relative percentages applying from the other three sources decreasing. However, the distribution of most to least represented source of application is still the same, with CSS being the largest, followed by BEOG, ACT and PHEAA, respectively. Second, the percent of applicants from each source selected for validation has also increased for the BEOG group and decreased for the other three processors. CSS, however, remains

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overrepresented among validation applicants, and BEOG, underrepresented. The proportions of PHEAA and ACT applicants selected for validation are similar to their proportions in the applicant population.

TABLE 3.1: PROFILE OF VALIDATION APPLICANTS BY APPLICATION SOURCE

| | BEOG | ACT | CSS | PHEAA |
|---|---|---|---|---|
| % in Population | | | | |
| Phases I/II | 30.0% | 17.9% | 48.7% | 3.4% |
| Phases III/IV | 36.6 | 16.5 | 43.9 | 3.0 |
| % in Validation Group | | | | |
| Phases I/II | 24.2 | 15.0 | 57.6 | 3.0 |
| Phases III/IV | 29.7 | 14.7 | 52.6 | 2.9 |

The distribution of validation applicants by application source is not the same as the distribution by application source in the population. CSS applicants are overrepresented by almost one-fifth, while all other applicants are underrepresented, particularly the BEOG applicants. This suggests that some feature of the CSS application process or some common characteristics of the CSS applicants are correlated with the validation selection criteria. This may have occurred because more CSS applicants (relative to their proportion in the population) have been rejected, and rejection is a prerequisite for several of the validation selection criteria.

## 3.2: KEY ANALYSIS ISSUES

Preliminary findings have shown substantial variation in the behavior of validation applicants using different application sources. To determine whether the source of application is related to the impact of validation on applicants' corrections, eligibility index changes and, ultimately, award payments, we addressed the following issues:

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- Are there differential rates of rejection by application source?
- What are the most successful criteria, in terms of corrections and eligibility index changes, by application source?
- What is the comparative validity of data fields by application source?
- Are there differential rates of payment by application source?

The first two issues were addressed in Phases I/II, and preliminary findings stated. Overall, Phase III replications of earlier analyses support these findings, such that trends can be asserted. Where the results of Phase III analyses deviate from the Phases I/II findings, this will be stated and explained.

The last two issues have been addressed in Phase IV only, since recipient data was not available until that time. The results of these analyses are discussed relative to the findings concerned with the replicated data, either in terms of further substantiation or new findings. Each of the four issues is addressed in a separate section of this Chapter.

## 3.3: REJECTION RATES BY APPLICATION SOURCE

We examined applicants' current and previous eligibility status (eligible, ineligible or rejected) by application source. Although BEOG applicants now have a slightly higher rejection rate than CSS applicants, the general patterns of current and previous eligibility status by application source are similar across all Phases, as Table 3.2 demonstrates.

CSS and PHEAA applicants have the highest proportion of applicants who have ever been rejected. PHEAA applicants are ineligible more than any other group of filers, but have the lowest rates of remaining rejected. This indicates that PHEAA applicants are having less trouble re-entering the system (or, perhaps, are getting assistance in form completion). Although BEOG filers remain rejected at relatively high rates, over 50% of them appear to be re-entering the system successfully, since they have high rates of eligibility. ACT applicants, with the highest rate of successful re-entry for Phases III/IV, are experiencing less difficulty with the application processing system than those who



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used the BEOG form, since ACT also had a lower percentage of its filers remaining rejected than did BEOG. It is possible that BEOG applicants

TABLE 3.2: APPLICANTS' CURRENT AND PREVIOUS ELIGIBILITY STATUS BY APPLICATION SOURCE, PHASES I/II AND PHASES III/IV[1/]

| Application Source | % Ever Rejected | % Currently Eligible 1/ | % Currently Ineligible 1/ | % Currently Not Previously Rejected 1/ | % Always Rejected 1/ |
|---|---|---|---|---|---|
| BEOG | | | | | |
| Phases I/II | 38.2% | 45.7% | 10.2 | .9 | 43.2 |
| Phases III/IV | 39.3 | 51.2 | 12.6 | .9 | 35.3 |
| ACT | | | | | |
| Phases I/II | 34.0 | 39.9 | 15.1 | 1.6 | 43.4 |
| Phases III/IV | 41.0 | 51.6 | 19.9 | 1.2 | 27.3 |
| CSS | | | | | |
| Phases I/II | 44.9 | 38.7 | 22.3 | .9 | 38.1 |
| Phases III/IV | 49.5 | 47.4 | 24.9 | .8 | 26.9 |
| PHEAA | | | | | |
| Phases I/II | 26.7 | 35.6 | 21.0 | 1.7 | 41.7 |
| Phases III/IV | 48.5 | 42.4 | 37.8 | 1.1 | 18.7 |

1/ These percentages are relative to the number ever rejected for each source.

are remaining rejected at higher rates than other applicants because they were misreporting and decided not to re-enter the system. On the other hand, BEOG applicants tend to be aided by validation more often than those filing from other sources, as indicated by more frequent changes to their advantage after validation.

The findings of Phases I/II regarding eligibility status by application source are only partially supported by Phases III/IV data. The most notable differences are: (1) that the percentage of applicants from each source that remains rejected has decreased; in particular, the percentage of PHEAA applicants who have always been rejected has decreased; BEOG applicants show the least improvement in that category, (2) In Phases I/II BEOG filers were second only to CSS filers in the

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percentage of applicants who were ever rejected; the later data shows that BEOG filers now have the lowest rates of overall rejection, but the highest rates of remaining in rejection status, once it has been ascribed.

CONCLUSION #1: BEOG applicants show the poorest processing record. This is due to their high rejection rate combined with fairly low rates of re-entry. PHEAA applicants, on the other hand, have about equal rates of current eligibility and ineligibility for applicants who have previously been rejected.

## 3.4: PEC CRITERIA BY APPLICATION SOURCE

Chapter 2 was concerned with a comparison of the individual PEC for all validation applicants. It pointed out the most successful criteria in terms of post selection corrections, eligibility index changes and expected payment. This section relates to variation in submission of corrections and eligibility index changes by application source. Table 3.3 displays the detailed findings in this regard, using Phase III data. Table 3.4 summarizes the most successful criteria in terms of effective eligibility index changes by application source. The findings are compared for Phases I/II and Phases III/IV.

Comparing the corrections behavior by application source for the two sets of findings, we note that the average EI change resulting from post selection corrections made by the applicants from each source have changed little. The range of difference between the EI change of the highest group (PHEAA, 213) to the lowest group (BEOG, 96) has narrowed from what it was previously (PHEAA, 225; BEOG, 65), but the order is the same, from highest to lowest -- PHEAA, CSS, ACT, BEOG. As was the case previously, there is currently little difference in the percent of applicants from each group submitting corrections. The order of processors from which the greatest percentage of applicants submit corrections has reversed; previously (from highest to lowest) it was: ACT and BEOG, CSS and PHEAA, now it is: PHEAA, ACT, CSS, BEOG.

There are some substantial differences in the most successful criteria by application source from the Phases I/II data and the Phases III/IV data. Previously, B1 was by far the most successful



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TABLE 3.3: NUMBER AND PERCENT OF VALIDATION APPLICANTS SUBMITTING CORRECTIONS SINCE SELECTION AND AVERAGE EFFECTIVE ELIGIBILITY INDEX CHANGE, BY APPLICATION SOURCE[1/]

| Applicant Subgroup | AEOS | | | | ACT | | | | CSS | | | | PIKAA | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | # Filing From This Source | # Submitting Corrections | % Submitting Corrections | Y Effective EI Change | # Filing From This Source | # Submitting Corrections | % Submitting Corrections | Y Effective EI Change | # Filing From This Source | # Submitting Corrections | % Submitting Corrections | Y Effective EI Change | # Filing From This Source | # Submitting Corrections | % Submitting Corrections | Y Effective EI Change |
| Validation Total | 35577 | 1811 | 33.2 | 86 | 17609 | 6400 | 36.8 | 148 | 63008 | 22935 | 36.4 | 187 | 3473 | 1292 | 37.2 | 213 |
| PEC A | 22445 | 8462 | 37.7 | 110 | 9820 | 4075 | 41.5 | 173 | 47697 | 18459 | 38.7 | 203 | 2293 | 985 | 41.2 | 235 |
| A1 | 3694 | 1660 | 28.7 | 71 | 472 | 168 | 35.6 | 8 | 3462 | 1173 | 33.9 | 64 | 376 | 136 | 36.2 | 39 |
| A2 | 3605 | 1568 | 43.5 | 219 | 1993 | 787 | 39.5 | 291 | 8229 | 3844 | 46.2 | 652 | 282 | 152 | 53.7 | 668 |
| A3 | 3328 | 1411 | 42.4 | 134 | 1654 | 519 | 31.4 | 147 | 5372 | 2433 | 45.3 | 635 | 158 | 75 | 47.5 | 572 |
| A4 | 7774 | 2783 | 35.8 | 90 | 2082 | 689 | 33.1 | 89 | 5269 | 1698 | 32.3 | 89 | 278 | 106 | 38.3 | 224 |
| A5 | 7713 | 2761 | 35.8 | 91 | 3098 | 692 | 33.1 | 89 | 5265 | 1697 | 32.3 | 89 | 276 | 106 | 38.3 | 224 |
| A6 | 6504 | 2471 | 44.9 | 242 | 4376 | 2228 | 50.9 | 269 | 11753 | 5882 | 50.9 | 489 | 857 | 446 | 52.0 | 379 |
| A7 | 1399 | 557 | 39.8 | -27 | 839 | 323 | 38.5 | 50 | 8861 | 3137 | 35.4 | 21 | 536 | 200 | 37.3 | 95 |
| A8 | 2324 | 869 | 37.4 | -48 | 837 | 326 | 38.9 | 5 | 17458 | 6023 | 34.5 | 39 | 293 | 96 | 32.8 | 92 |
| A9 | 218 | 66 | 30.1 | 113 | 372 | 112 | 30.1 | 86 | 787 | 258 | 32.8 | 70 | 349 | 114 | 32.7 | 101 |
| A10 | 226 | 107 | 47.1 | 68 | 67 | 38 | 56.7 | 100 | 174 | 65 | 37.3 | 161 | 6 | 2 | 33.3 | 0 |
| PEC B | 4912 | 1292 | 26.3 | 86 | 3856 | 1249 | 32.4 | 106 | 6059 | 1739 | 28.7 | 134 | 444 | 127 | 28.7 | 191 |
| B1 | 42 | 12 | 28.5 | -293 | 36 | 10 | 27.7 | -84 | 104 | 30 | 28.8 | 27 | 6 | 1 | 16.6 | 547 |
| B2 | 4873 | 1281 | 26.3 | 89 | 3819 | 1244 | 32.5 | 108 | 5962 | 1711 | 28.7 | 136 | 438 | 126 | 28.8 | 188 |
| B3 | 15 | 6 | 33.3 | 126 | 4 | 3 | 75.0 | 262 | 10 | 5 | 50.0 | 63 | 0 | 0 | 0 | 0 |
| PEC C | 2578 | 670 | 26.0 | 92 | 1675 | 452 | 28.7 | 130 | 3373 | 978 | 29.0 | 158 | 178 | 55 | 30.9 | 160 |
| C1 | 538 | 141 | 26.2 | 43 | 344 | 95 | 27.1 | 85 | 836 | 234 | 28.0 | 101 | 37 | 13 | 34.2 | 173 |
| C2 | 2040 | 532 | 26.0 | 104 | 1329 | 369 | 29.0 | 151 | 2551 | 745 | 29.2 | 178 | 138 | 41 | 30.0 | 156 |
| C3 | 3 | 0 | 0 | 0 | 1 | 1 | 100.0 | 426 | 7 | 1 | 14.2 | -163 | 0 | 0 | 0 | 0 |
| Random | 5076 | 1440 | 24.5 | 25 | 2516 | 752 | 29.9 | 66 | 6751 | 1965 | 29.1 | 85 | 453 | 121 | 26.7 | 77 |
| Nonvalidation Total | 741730 | 40063 | 5.4 | 53 | 330772 | 22823 | 6.9 | 48 | 868025 | 62498 | 7.2 | 71 | 60140 | 3368 | 5.6 | 24 |
| Nonvalidation Meeting PEC | 94273 | 6976 | 7.4 | 82 | 43721 | 3366 | 7.7 | 52 | 196743 | 15149 | 7.7 | 86 | 6148 | 430 | 7.0 | 151 |
| Nonvalidation not meeting PEC | 640613 | 33079 | 5.1 | 47 | 287718 | 19277 | 6.7 | 47 | 670233 | 46916 | 7.0 | 67 | 53219 | 2874 | 5.4 | 5 |

[1/] These data are based on the applicant file as of the end of February, 1979.



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TABLE 3.4: MOST SUCCESSFUL PEC BY APPLICATION SOURCE, PHASES I/II AND PHASE III

| | BEOG | | ACT | | CSS | | PHEAA | |
|---|---|---|---|---|---|---|---|---|
| | Phases I/II | Phases III/IV | Phases I/II | Phases III/IV | Phases I/II | Phases III/IV | Phases I/II | Phases III/IV |
| Average Initial Eligibility Index | 251 | 245 | 445 | 412 | 451 | 431 | 531 | 493 |
| Average Effective EI Change | +65 | +96 | +101 | +145 | +208 | +187 | +225 | +213 |
| Most Successful Criteria in Terms of Post Selection EI Changes | B1 (1250) | A6 (242) | A2 (221) | C3 (425) | A3 (620) | A2 (652) | A2 (688) | A2 (668) |
| | A6 (163) | A2 (219) | C3 (213) | A2 (291) | A2 (600) | A3 (635) | A3 (550) | A3 (572) |
| | A2 (135) | A3 (134) | A6 (177) | A6 (269) | A6 (506) | A6 (489) | A6 (340) | B1 (547) |
| | A10 ( 79) | B3 (125) | C1 (157) | B3 (262) | C2 (226) | C2 (178) | C2 (306) | A6 (379) |



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criteria in terms of EI changes by BEOG applicants; now the EI changes made by BEOG applicants meeting criterion B1 are minor. A10 is also a less successful criterion for BEOG applicants than it appeared to be earlier.

Criteria that have gained in importance relative to corrections made by BEOG applicants are: A3, B3, A9, and C2. For ACT applicants only C1 has lost significance; gaining importance are: B3, A3, B2 and A10. None of the criteria listed in the Phases I/II analysis relative to CSS and PHEAA applicants have lost importance; however, A10, B2 and C1 have become more significant for CSS applicants, and A4, A5, C1 and A9 for PHEAA applicants.

CONCLUSION #2: The data in the preceding tables can be summarized as follows:

| | BEOG | ACT | CSS | PHEAA |
|---|---|---|---|---|
| Greatest % Correcting | A6 | B3 | A6 | A2 |
| | A2 | A10 | B3 | A6 |
| | A3 | A6 | A2 | A3 |
| Highest EI Increase | A6 | A2 | A2 | A2 |
| | A2 | A6 | A3 | A3 |
| | A3 | C3 | A6 | B1 |

Thus it can be seen that criteria A2, A3 and A6 outweigh all other criteria in terms of percent of applicants correcting post selection and resultant EI changes.

CONCLUSION #3: There does not appear to be the same degree of variation in corrections behavior by application source as more preliminary findings had indicated. The gap in average effective EI change as well as initial eligibility index has narrowed. There is still, however, some variation in the specific criteria having the most impact by validation source. While applicants meeting criteria A2, A3 and A6 tend to have the highest EI increases and submit corrections most frequently regardless of application source, several other criteria are significant for various sources. B3 figures significantly in percent correcting for ACT and CSS filers, A10 for ACT filers; C3 is significant in terms of EI changes for ACT filers, and B1, for PHEAA filers. Thus, it might be

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cost-effective to consider making the following selections for validation by application source:

- -- ACT filers who meet criteria B3, A10 and C3
- -- CSS filers who meet criterion B3, and
- -- PHEAA filers who meet criterion B1.

## 3.5: VALIDITY OF DATA FIELDS BY APPLICATION SOURCE

Five application fields are required to be validated by the financial aid officer at the institution to which a validation applicant is applying:

- -- dependency status
- -- number in the household enrolled in postsecondary educational institutions
- -- household size
- -- federal taxes paid, and
- -- adjusted gross income

These data fields are viewed as either valid at applicants' selection for validation (data at selection equals data at payment) or invalid. Furthermore, accurate information may or may not have been reported on a transaction prior to, at, or before selection. We have included two additional fields in our analyses of valid data fields -- nontaxable income, which is an optional validation field, and AGI equal to the sum of portions, although this reconciliation is not required for validation.

When these data fields are analyzed by application source, ACT applicants have more items valid at selection and always valid pre selection than applicants from any other source, as Table 3.5 demonstrates.

These findings suggest that the processing system edits are causing applicants from all sources to make most of the necessary corrections to their applications before validation. With regard to application source, ACT filers are almost twice as likely as PHEAA filers to be paid.

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TABLE 3.5: OVERALL VALIDITY OF KEY DATA FIELDS, BY APPLICATION SOURCE

| | BEOG | ACT | CSS | PHEAA |
|---|---|---|---|---|
| % Expected To Be Paid | 20.2% | 33.0% | 26.5% | 17.9% |
| **Validity of Items** | | | | |
| PHE | | | | |
| % Valid at Selection | 96.6 | 97.5 | 98.0 | 98.5 |
| % Always Valid Pre Selection | 78.9 | 83.0 | 85.7 | 77.9 |
| HS | | | | |
| % Valid at Selection | 95.7 | 96.3 | 96.7 | 98.2 |
| % Always Valid Pre Selection | 69.5 | 78.5 | 79.4 | 69.6 |
| Sum of Portions | | | | |
| % Valid at Selection | 88.7 | 92.5 | 92.3 | 93.3 |
| % Always Valid Pre Selection | 69.9 | 68.9 | 65.1 | 62.4 |
| NTI | | | | |
| % Valid at Selection | 87.8 | 92.0 | 91.7 | 91.7 |
| % Always Valid Pre Selection | 62.3 | 67.5 | 56.0 | 53.1 |
| TP | | | | |
| % Valid at Selection | 90.3 | 86.1 | 89.7 | 90.8 |
| % Always Valid Pre Selection | 69.5 | 70.2 | 58.4 | 54.9 |
| AGI | | | | |
| % Valid at Selection | 86.9 | 89.1 | 88.1 | 90.8 |
| % Always Valid Pre Selection | 57.7 | 56.4 | 31.3 | 43.0 |

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Similarly, each of the data fields are more frequently valid at selection and more often valid pre selection for ACT filers than filers from any other source. BEOG applicants are least likely to have valid items at selection, and CSS and PHEAA applicants least likely to have items always valid pre selection.

The following table shows the items most and least likely to be valid, by application source.

TABLE 3.6: ITEMS MOST AND LEAST LIKELY TO BE VALID, BY APPLICATION SOURCE FOR THOSE EXPECTED TO BE PAID

| | BEOG | ACT | CSS | PHEAA |
|---|---|---|---|---|
| Items Most Often Valid at Selection | PHE 96.6% | PHE 97.5% | PHE 98.1% | PHE 98.5% |
| Items Least Often Valid At Selection | AGI 86.9% | TP 86.1% | AGI 88.1% | TP & AGI 90.8% |
| Items Most Often Always Valid | PHE 78.9% | PHE 83.0% | PHE 85.7% | PHE 77.9% |
| Items Least Often Always Valid | AGI 57.7% | AGI 56.4% | AGI 31.3% | AGI 43.0% |

There is little variation by application source in the items most and least often valid. The only two items worth mention are that ACT filers are least likely to have taxes paid valid at selection (as opposed to AGI for all other filers), and that CSS filers have a low rate of accuracy for AGI pre selection.

CONCLUSION # 4: There is some variation by application source in the validity of data fields. ACT filers most frequently have valid data fields, both at selection and pre selection. BEOG applicants are least likely to have valid data fields at selection, and CSS and PHEAA

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applicants more frequently have invalid fields pre selection. This data is consistent with the corrections records by application source -- CSS and BEOG applicants have the highest rejection rates and PHEAA applicants most frequently submit corrections after their selection for validation.

## 3.6: EXPECTED PAYMENT BY APPLICATION SOURCE

For analysis purposes, an applicant is "expected to be paid" if s/he is on the recipient file as of February, 1979. Chapter 2 discussed variations in expected payment by criterion group; this section discusses such variation by application source. Expected payment was estimated on the transaction at selection and an average obtained for each criterion group by application source. The average difference between the values on the payment transaction and the selection transaction was calculated by subtracting the value at selection from the value at payment. Therefore, a negative difference indicates that validation resulted in a decreased potential award amount. This difference was multiplied by the number of currently eligible applicants to yield an "estimated savings" of validation. Applicants were further divided into two groups -- those expected to be paid (i.e., on the recipient file) and those not yet on the recipient file (ineligible, rejected, or eligible, but no SER on recipient file; for estimating savings, however, only the eligibles and ineligibles were included in the calculation).

Table 3.7 which follows, summarizes the results of these calculations. A comparison of the data in these two tables reveals that eligible applicants tend to reduce their award potential regardless of whether they are or are not on the recipient file. This trend holds true across all sources of applications. PHEAA applicants who are expected to be paid have, by far, the largest average reduction in award potential. (The net effect of these changes for those not on the recipient file and for those expected to be paid will be discussed in Chapter 5. The focus of this Chapter is to note variations by application source).

For applicants who are not yet on the recipient file, PHEAA filers tend to reduce their potential award by the greatest amount, and BEOG

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TABLE 3.7: CHANGES IN AWARD POTENTIAL BY APPLICATION SOURCE SINCE SELECTION

| CRITERION | BEOG | ACT | CSS | PHEAA |
|---|---|---|---|---|
| **APPLICANTS NOT YET ON THE RECIPIENT FILE** | | | | |
| X $ DIFFERENCE BETWEEN PAYMENT AND SELECTION TRANSACTIONS 1/ 2/ | $- 6.5 | $- 15.1 | $- 15.6 | $- 23.7 |
| TOTAL # CURRENTLY ELIGIBLE | 27,224 | 11,199 | 43,228 | 2,690 |
| ESTIMATED TOTAL $ DIFFERENCE 1/ 3/ | $-176,956 | $-169,104 | $-674,356 | $- 63,753 |
| **APPLICANTS EXPECTED TO BE PAID** | | | | |
| X $ DIFFERENCE BETWEEN PAYMENT AND SELECTION TRANSACTIONS | $- 16.2 | $- 18.6 | $- 17.2 | $- 31.7 |
| TOTAL # CURRENTLY ELIGIBLE | 7,056 | 5,745 | 16,485 | 624 |
| ESTIMATED TOTAL $ DIFFERENCE | $-114,307 | $-106,857 | $-283,198 | $- 19,780 |

1/ A positive value indicates that increased payment results from selection to payment transaction.

2/ Calculated based on payment (or latest, for those not yet on the recipient file) transaction value minus value at selection.

3/ Calculated based on average change in expected disbursement from selection to payment times the number of currently eligible applicants who are expected to be paid, and on average change in estimated award from selection to latest transaction for those not yet on the recipient file.



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filers, by the least amount, in terms of average amount of change from selection to latest transaction in estimated payment per applicant. The total estimated reduction in potential awards is, however, greatest for CSS applicants, followed by BEOG, ACT and PHEAA applicants, respectively. This is to be expected, since CSS filers constitute more than half of the applicant population. It is interesting to note that the average change per ACT applicant is larger than those for BEOG applicants, which suggests that BEOG applicants may not be as discrepant as their rejection rate might imply.

For applicants who <u>are</u> expected to be paid, the same pattern of variation in changes to potential award amounts is exhibited, with PHEAA filers reducing award potential by the largest amount, followed by ACT, CSS and BEOG filers in that order. The same trend also holds for total estimated difference in award potential, with CSS filers showing the largest net decrease overall in award potential, followed by BEOG, ACT and PHEAA filers, respectively.

CONCLUSION #5: Applicants who are expected to be paid as well as those not yet on the recipient file, make post selection corrections which increase their award potential. Perhaps the applicants who made significant changes to their disadvantage became discouraged and did not submit their SERs to the institutions. However, since 75 percent of all validation applicants are not yet on the recipient file, this cannot explain all of their behaviors. (Approximately 35 percent of all validation applicants submit <u>any</u> corrections after their selection.) It is more plausible that the recipient file was not up to date at the time these analyses were performed.

CONCLUSION #6: PHEAA filers tend to reduce their award potential more than those filing from any other source. BEOG filers on the other hand, tend to have the smallest post selection corrections. This seems to contradict the findings in the previous section, which stated that ACT filers most frequently have valid data fields both pre selection and at selection; BEOG filers are least likely to have valid data fields at selection; and

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PHEAA and CSS applicants are least likely to have valid data fields pre selection. However, to have invalid data fields does not imply anything about the direction or magnitude of the changes required to make data fields valid. Therefore, we can conclude that PHEAA filers, who were least accurate pre selection, make the largest reductions in award potential by post selection corrections; BEOG filers who are least accurate at selection and make the smallest post selection corrections are not inaccurate at selection by large amounts.

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## IMPACT OF NEW AND TIGHTENED PROCESSING SYSTEM EDITS
## CHAPTER 4 SUMMARY

Another new program procedure introduced by the Bureau of Student Financial Assistance for the 1978-79 academic year was the addition of new and more restrictive application processing system edits. We attempted to assess the impact of these new and tightened edits on applicants' corrections behaviors. These analyses focused on the impact of the edits alone; Chapter 5 contains analyses of the interactive effects of the edits and validation. The findings relating to analyses of the impact of the edits are summarized below:

- More than half of all regular nonsupplemental filers submitted unacceptable applications; that is, they received one or more processing system edits.
- Approximately 30 percent of applicants rejected by new and tightened edits have not reentered the processing system, compared to 18 percent of applicants receiving other edits only.
- Applicants who are award recipients and who changed (a) field(s) in response to (a) tightened edit(s) and who are not currently rejected reduce their award potential by about three times the amount of those responding similarly to new edits. Those in this response category, who received edits not related to the fields addressed by the new or tightened edits are, on the average, increasing their award potential. Similar trends in eligibility index changes are indicated for those not yet on the recipient file.
- Applicants who verify in response to an edit comment are increasing their award potential.

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- Applicants with incomes less than $4000 who are rejected by an edit remain rejected more frequently than those at other income levels.

In general, the tightened edits and edits related to the new and tightened edit fields, are resulting in substantial increases in eligibility indices for applicants not yet on the recipient file and in reduced award potential for those who are on the recipient file. The new edits have the same effect, but not to the degree of the tightened edits. Edits not related to new and tightened edit fields tend to have the opposite effect. This is because response to these edits (which often relate to basic identification data) probably results in applicants attaining an eligibility index for the first time.

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# 4

# IMPACT OF THE NEW AND TIGHTENED EDITS

## 4.1: BACKGROUND, KEY ANALYSIS ISSUES AND DATA LIMITATIONS

Since validation is so closely linked with the application correction processing system, it is not possible to assess the impact of validation without examining the role of the corrections system and the changes to the system introduced in 1978-79. Therefore, a subset of this study is devoted to the impact of the new and tightened edits, particularly as they impact on validation.

This chapter is chiefly concerned with those aspects of the processing system which differed from what was in effect in prior years--the new and tightened edits. To assess the separate impact of the new and tightened edits on applicants' corrections behavior, two comparisons were made:

1) the number, response mode, eligibility index changes, and effect on expected disbursement of applicants who received new and/or tightened edits to certain fields were compared to those who received other edits (non-new and non-tightened to fields related to new and tightened edits) and to those who received other non-related edits to those fields; and

2) the post-selection response mode for validation applicants, including response to processing comments, was compared to response mode of nonvalidation applicants with respect to the edit comments.

To estimate the eligibility index changes and resultant changes in expected disbursement attributable to new and tightened edits, we divided the edit comments into new and tightened categories and set up a control group of other non-new or non-tightened edits related to those fields,

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based on available documentation. (We also distinguished applicants who received both new and tightened edit comments, new plus non-new edit comments and tightened plus non-tightened edit comments, from those who received new or tightened or other edit comments only.) Separate categories were established for each of the following edit receipt classifications:

Tightened Edits Only

Refers to those edits in the current system which have been made more stringent than in prior years. Applicants who received one or more tightened edits, but no new edits, are in this group. Applicants in this group may also have received other non-new edits, related to tightened edit data fields.

New Edits Only

Refers to those edits in the current system which are new in the 1978-79 processing system. Applicants who have received one or more new edits, but no tightened edits, are in this group. Applicants in this group may also have received other non-tightened edits, related to new edit data fields.

Both New and Tightened Edits

Refers to the presence of both new and tightened edits. Applicants in this group must have received at least one new edit and at least one tightened edit, but may also have received other edits, related to new and tightened edit data fields.

Total: All New and Tightened Edits

Refers to the presence of at least one new edit or at least one tightened edit, or both. Applicants in this group may have also received other non-new or non-tightened edits, related to new and tightened edit data fields.

Total: Other Related Edits Only

Refers to applicants who received only non-new or non-tightened edits to the same fields addressed by the new and tightened edits. This category does not include other edits to fields not affected by the new and tightened edits.

Other Edits Only

Refers to applicants who received only other edits to data fields not affected by the new and tightened edits.

We analyzed applicant responses in five categories—those making corrections and not currently rejected, those verifying information,

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those making corrections who were subsequently rejected, those making no response who are rejected, and those making no response who are not rejected—to new, tightened and other edit comments. Each of these response categories is explained below.

Applicants Changed Field and Are Not Rejected

Applicants who changed one or more fields addressed by the edit(s) between the time the edit was received and the latest transaction. Applicants in this group must have changed at least one of the fields addressed by (an) edit(s), but may have changed other fields as well.

Applicants Verified Field

Applicants who did not change any field(s) addressed by the edit(s) between the time the edit was received and the current transaction. Applicants in this group could not have changed any field(s) addressed by the edit(s), but may have changed other fields not addressed by the edits in question.

Applicants Have Subsequent Transactions and Are Currently Rejected

Applicants who had at least one more transaction after receiving the edit in question, but are currently rejected. This may mean that the applicant did not succeed in responding to the comment, or she/he may have responded properly and/or made other changes that resulted in a condition causing a rejection edit.

Applicants Have No Subsequent Transaction and Are Currently Rejected

Applicants who received (a) rejection edit(s) and have not submitted another transaction.

Applicants Have No Subsequent Transaction and Are Not Rejected

Applicants who received (an) edit(s), but who have not submitted a subsequent transaction and are not rejected. Applicants who received comments not requiring an action before eligibility can be determined; those who have no additional transactions are in this group.

Eligibility index change was computed from the transaction on which the comment(s) was(were) received to the transaction immediately following receipt of the comment(s). This impact is estimated by multiplying the number of applicants in each response category by the average EI point change to arrive at an aggregate EI point change. Mean change in scheduled award is estimated based on the same comment span, using the eligibility index, and cost of education, and is subtracted



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from the actual value at the transaction of payment. Expected disbursement is calculated in the same manner, except that applicant enrollment status is taken into account as well.

Some caveats concerning the interpretation of the findings in this chapter must be stated:

1) Applicants who are rejected do not have an eligibility index. In order to assess the impact of the edits, it was necessary to compute an eligibility index for applicants on the transaction of rejection and compare the difference between that index and the index received after they responded to the rejection comment.

   The computation of the index is confounded by the fact that one of the reasons for rejection is missing data. Ideally, the way to obtain reliable estimates for missing data is to conduct a nonrespondent survey. In this case, it would entail selecting a representative sample of rejected applicants with missing data, and contacting them to find out true values. Unfortunately, this study is confined solely to statistical analysis of existing data, and it is not within the scope of this contract to conduct such a survey. Two alternative methodologies that are limited to using existing data were considered for this computation. One was to substitute average values from applicants who had been rejected, but provided data, for those who had missing data. The second was to assume values based on other data reported, where possible, and where not possible, to assume the missing value to be zero.

   Neither of these alternative procedures is ideal because each introduces errors. However, given the study goals, a procedure was selected that was judged to have the least serious limitations.

   The limitations of the method of substituting average values are:

   a) The fact that the applicants (whose average values could be used for substitution) provided data made them different from those who omitted data. Therefore, from a statistical design perspective, these applicants are not equivalent and such a substitution would introduce biases of an unknown magnitude and direction.

   b) From an operational perspective, the number of categories of applicants who would have to be defined would be extremely large, greatly increasing the time necessary to process the computations.

   The limitation of the zero/logically derived substitution approach is that it introduces a bias of an unknown magnitude, but a known direction. That is, we know that we may be using a zero instead of a value. Therefore, this procedure introduces a bias which probably understates actual values to some unknown degree.

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The approach that was selected was the zero/logically derived substitution approach because the unknown component of the error is limited to magnitude and not direction. Further, this approach better allows us to approximate the effects of the new and tightened edits over previous edits since many of the previous edits used the zero/logically derived substitution approach. The specific assumptions used for each field may be found in Appendix B.

2) It is also possible that applicants who received new, tightened or other edit comments, and who make changes to the fields to which the edit comments apply, may be submitting these corrections for reasons other than those solicited by the edit comments they received. To the extent that corrections which appear to be made in response to the edit comments are made for other reasons, the attribution of eligibility index changes to the new, tightened and other edit comments may be overestimated.

## 4.2: IMPACT OF THE NEW AND TIGHTENED EDITS ON ELIGIBILITY INDEX, SCHEDULED AWARD AND EXPECTED DISBURSEMENT

A substantial number of applicants have received edit comments to critical fields. Table 4.1 summarizes the response mode of applicants receiving new and tightened edits and other edits related to fields affected by the new and tightened edits. It compares response modes for Phases I/II and Phases III/IV since earlier data indicated that a significant proportion of applicants receiving edit comments had not re-entered the processing system after having been rejected. The percent of the applicant population receiving new and tightened edits has not decreased. In total, more than half of all regular filers submitted an application that was not acceptable. The percentage of rejected applicants has decreased slightly, but there has been a slight increase in the percentage of applicants receiving new and tightened edits who have no subsequent transaction and who are not rejected. Perhaps this is due to the increase in ineligible applicants, primarily those filing CSS or PHEAA applications. The greatest impact of the processing system edits is occurring for applicants who have been rejected and have not succeeded in re-entering the processing system. This has been a consistent trend throughout this study. These applicants cannot receive

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TABLE 4.1: NUMBER AND PERCENT OF APPLICANTS IN EACH RESPONSE CATEGORY, PHASES I/II AND III/IV

| Applicant Response | Applicants Receiving New and Tightened Edits | | Applicants Receiving Other Edits Only | |
|---|---|---|---|---|
| | Phases I/II | Phases III/IV | Phases I/II | Phases III/IV |
| Total # Receiving | 688,509 | 887,483 | 1,012,198 | 1,035,493 |
| - % of regular filers | 21.9% | 23.7% | 32.2% | 27.7% |
| Submitted corrections, not currently rejected | | | | |
| - # | 276,466 | 397,511 | 229,716 | 365,134 |
| - Column % | 40.1% | 44.8% | 22.7% | 35.3% |
| Verified Information | | | | |
| - # | 56,339 | 109,058 | 149,883 | 101,753 |
| - Column % | 8.2% | 12.3% | 14.8% | 9.8% |
| Submitted correction, currently rejected[1] | | | | |
| - # | 61,215 | 58,257 | 39,530 | 29,901 |
| - Column % | 8.9% | 6.5% | 3.9% | 2.9% |
| No Subsequent transaction, and is rejected[1] | | | | |
| - # | 216,805 | 209,097 | 173,604 | 156,450 |
| - Column % | 31.5% | 23.6% | 17.1% | 15.1% |
| No subsequent transaction, not rejected | | | | |
| - # | 77,684 | 113,560 | 419,615 | 382,255 |
| - Column % | 11.3% | 12.8% | 41.4% | 36.9% |

1/For rejected applicants, an average effective eligibility index change was computed by applying the formula for determining Basic Grant eligibility and limiting indices exceeding 1,600 to 1,600. In instances where key data were missing, the value was assumed to be zero unless it could be logically derived from other data provided by the applicant.

an award; thus the Basic Grant Program should experience a substantial drop in the percentage of applicants who receive awards. In Chapters 2 and 3, we noted that only 25 percent of all validation applicants are in

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the recipient file as of February, 1979. In earlier years, an average of 79 percent of all eligible applicants became award recipients; whereas only about 27 percent (998,000) of all applicants were on the recipient file by February, 1979. These data indicate that validation applicants are having only slightly more difficulty than the total applicant population in attaining recipient status. This trend could be caused by one or a combination of several factors: (1) the first-time use of complex application forms intended to serve multiple data needs and perhaps not compatible with the data requirements for the Basic Grant application; (2) the impact of the new and tightened edits on applicants' corrections behavior, and, ultimately, decisions to apply for a grant; (3) the validation process itself; and/or (4) the possibility that many recipients had not yet been recorded on the recipient file. We conclude that each of these changes in Basic Grant program procedures is contributing to the low recipient rate. Chapter 5 summarizes the potential impact of each factor in this regard.

For applicants who re-entered the processing system, the impact of the edits is also significant. Preliminary findings had indicated that proportionately more applicants receiving new and tightened edits submitted corrections than those who received other edits related to the same field. These preliminary data are borne out by the Phases III/IV data as well. Thus, the new and tightened edits are eliciting more corrections, yet a substantial proportion of the applicants who received these edits have not succeeded in re-entering the system.

Table 4.2 examines the effect of the edits in terms of eligibility index changes, scheduled award changes and changes in expected disbursement, by response mode. The caveats about interpretation of the results of this analysis, stated in the preceding section, should be kept in mind. Also, for Phases III/IV, a slightly different method of computing EI change was used. In Phases I/II EI change was computed from the transaction on which the comment was received to the most current

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TABLE 4.2: SUMMARY OF APPLICANT RESPONSES TO NEW, TIGHTENED AND OTHER EDITS

| | Tightened Edits Only 1/ | | New Edits Only 2/ | | Both New and Tightened Edits 2/ | | Total: All New and Tightened Edits | | Total: Other Related Edits Only | | Total: Other Non-related Edits Only |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Phases I/II | Phases III/IV | Phases I/II | Phases III/IV | Phases I/II | Phases III/IV | Phases I/II | Phases III/IV | Phases I/II | Phases III/IV | Phases III/IV |
| Total # of Applicants | 446,023 | 457,219 | 234,871 | 342,727 | 47,610 | 87,537 | 688,509 | 887,483 | 1,012,298 | 1,235,493 | 128,361 |
| A. Applicants Changed Field and are Not Rejected | 144,577 | 210,115 | 93,672 | 136,178 | 18,217 | 31,218 | 276,466 | 397,511 | 229,716 | 365,134 | 63,644 |
| % effective EI change 4/ | 235 | | 110 | | 136 | | 198 | | 325 | | |
| # applicants who were expected to be paid 3/ | | 57,453 | | 46,444 | | 14,884 | | 118,781 | | 109,324 | 19,134 |
| % change in estimated award | | 53,361<br>-9% | | 28,218<br>-33 | | 13,468<br>-24 | | 95,067<br>-6% | | 94,833<br>-6% | 591<br>-8% |
| % change in disbursement | | -9% | | -33 | | -24 | | -6% | | -6% | 7% |
| Those who do not submit SSR and are eligible | | 75,106 | | 62,948 | | 28,177 | | 166,231 | | 137,611 | 21,466 |
| % effective EI change | | 44,484<br>0 | | 46,238<br>-1% | | 25,947<br>-8% | | 139,769<br>-1% | | 126,126<br>-1% | 822<br>-11% |
| # who are ineligible | | 77,356 | | 26,784 | | 8,157 | | 112,499 | | 122,199 | 22,828 |
| % effective EI change | | 72,586<br>+1% | | 18,509<br>+7% | | 7,222<br>7% | | 98,726<br>+2% | | 108,629<br>3% | 966<br>+4% |

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TABLE 4.2: (Continued)

| | Tightened Edits Only 1/ | | New Edits Only 2/ | | Both New and Tightened Edits 3/ | | Total: All New and Tightened Edits | | Total: Other Related Edits Only | | Total: Other Non-related Edits Only |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Phases I/II | Phases III/IV | Phases I/II | Phases III/IV | Phases I/II | Phases III/IV | Phases I/II | Phases III/IV | Phases I/II | Phases III/IV | Phases III/IV |
| 5. Applicants Verified Field | 44,729 | 64,924 | 9,752 | 30,015 | 1,838 | 8,119 | 56,339 | 109,058 | 149,383 | 101,753 | 951 |
| % effective EI change | 50 | 16,711 | -71 | 9,387 | -102 | 2,318 | 24 | 28,416 | 15 | 33,063 | 304 |
| # Applicants who were expected to be paid | | 18,824 | | 9,309 | | 2,346 | | 30,679 | | 33,615 | 323 |
| % change in scheduled award | | 16,711<br>16 | | 9,387<br>26 | | 2,318<br>90 | | 28,416<br>24 | | 33,063<br>16 | 304<br>53 |
| % change in expected disbursement | | 14 | | 26 | | 77 | | 23 | | 13 | 53 |
| Those who did not submit an SER and are eligible | | 24,234 | | 18,383 | | 4,999 | | 58,232 | | 51,279 | 284 |
| % effective EI change | | 20,497<br>3 | | 18,743<br>-31 | | 4,779<br>-69 | | 54,021<br>-15 | | 50,692<br>-13 | 234<br>-73 |
| # who are ineligible | | 11,746 | | 7,323 | | 778 | | 20,067 | | 16,899 | 244 |
| % effective EI change | | 11,281<br>124 | | 7,422<br>345 | | 778<br>330 | | 19,481<br>220 | | 16,864<br>29 | 219<br>-81 |
| Applicants Upon Assessment Transactions & Are Currently Employed | | 32,939 | | 12,919 | | 12,299 | | 58,257 | | 29,981 | 944 |
| % effective EI computed | 41,268<br>908 | 31,727<br>960 | 11,290<br>420 | 12,191<br>467 | 8,967<br>458 | 12,331<br>531 | 61,215<br>550 | 55,239<br>580 | 29,330<br>366 | 29,662<br>548 | 221<br>963 |

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TABLE 4.2: (Continued)

| | Tightened Edits Only 1/ | | New Edits Only 2/ | | Both New and Tightened Edits 3/ | | Total: All New and Tightened Edits | | Total: Other Relaxed Edits Only | | Total: Other Non-related Edits Only |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Phases I/II | Phases III/IV | Phases I/II | Phases III/IV | Phases I/II | Phases III/IV | Phases I/II | Phases III/IV | Phases I/II | Phases III/IV | Phases III/IV |
| D. Applicants Have No Subsequent Transactions & Are Currently Rejected | | 94,348 | | 99,314 | | 14,835 | | 209,097 | | 136,458 | 11,233 |
| % effective Computed EI | 110,474<br>409 | 87,394<br>458 | 93,497<br>772 | 49,887<br>584 | 12,834<br>643 | 14,233<br>723 | 216,805<br>682 | 151,514<br>640 | 173,606<br>539 | 149,282<br>515 | 330<br>799 |
| E. Applicants Have No Subsequent Transactions & Are Not Rejected | 42,220 | 54,293 | 24,700 | 58,204 | 7,754 | 996 | 77,684 | 113,560 | 419,815 | 382,255 | 44,189 |
| # Who were expected to be paid | | 18,982 | | 22,735 | | 370 | | 42,127 | | 114,334 | 13,166 |
| % expected disbursement | | 956 | | 1,018 | | 1,324 | | 993 | | 997 | 994 |

1/ Changes submitted by applicants in this group may be confounded by the presence of other non-new edits.

2/ Changes submitted by applicants in this group may be confounded by the presence of other non-tightened edits.

3/ Changes submitted by applicants in this group may be confounded by the presence of other edits.

4/ This change was computed for the total number of applicants in each response category.

5/ The applicants who fit this response mode but who received edits only in fields which do not affect EI (e.g. application signature, applicant birthdate) are not included in the number used to calculate EI change.

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transaction. In Phases III/IV, we attempted to isolate the actual EI change attributable to the edits by calculating the change from the transaction on which the comment was received to the transaction immediately following receipt of that type of comment (new, tightened or other). If an applicant received more than one comment of a particular type, the change was added for each comment to produce an overall EI change in response to comments.

We note that the recomputed EIs have generally increased from Phases I/II to Phases III/IV. The expected awards for applicants who have changed a field and who are not rejected are reduced. This is consistent with the findings reported in Chapters 2, 3 and 5 that applicants who are on the recipient file as of the end of February, 1979, tend, on the average, to have reduced their award potential. Furthermore, applicants who have not submitted an SER for payment and are eligible, and those who are currently ineligible have, on the average, made changes that substantially increase the eligibility index and therefore reduce award potential. However, applicants who have verified the information tend to increase their award potential. This could be due to the possibility of these applicants obtaining an eligibility index for the first time.

We also note that responses to tightened edits generally result in greater savings to OE than any other type of edit. Responses to edits unrelated to the new and tightened edit fields, tend to have the opposite effect, however. This is most likely caused by the nature of these edits—most of them relating to identification data—and that responses probably result in the first-time attainment of an eligibilty index. A later recipient data base than that available for this study is needed to verify the trends reported in the Phases I/II and III/IV analyses.

To determine the extent to which the processing system edits (all edits, rather than just the new and tightened edits) impacted on applicants' post selection (or eligibility) corrections' behavior, we

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compared the post selection response modes of validation and nonvalidation applicants (and those who did and did not meet the PEC within each of these groups). Table 4.3, which follows, contains the results of this analysis.

TABLE 4.3: COMPARISON OF RESPONSES OF VALIDATION AND NONVALIDATION APPLICANTS TO PROCESSING SYSTEM EDITS

| | VALIDATION APPLICANTS | | | | NONVALIDATION APPLICANTS | | | |
|---|---|---|---|---|---|---|---|---|
| | % CORRECTING POST SELECTION | % EFFECTIVE EI CHANGE | % IN RESPONSE TO EDITS | % EFFECTIVE EI CHANGE | % CORRECTING POST ELIGIBILITY | % EFFECTIVE EI CHANGE | % IN RESPONSE TO EDITS | % EFFECTIVE EI CHANGE |
| TOTAL | 31.8 | +168 | 83.5 | +180 | 3.6% | + 74 | 51.9% | + 34 |
| PEC | 32.9 | +179 | 87.3 | +191 | 4.4 | +111 | 84.8 | +109 |
| RANDOM | 24.1 | + 63 | 48.7 | + 3 | 3.4 | + 64 | 43.3 | - 5 |

This table shows that the edits are responsible for more than 80 percent of post selection (or eligibility) corrections made by validation and nonvalidation applicants who meet the PEC. Random applicants, on the other hand, regardless of whether they are selected for validation or not, make more unsolicited than solicited corrections. For the random group, eligibility index changes resulting from corrections made in response to comments are very low, whereas the opposite is the case for applicants who meet the PEC. These data strongly suggest that the edits which relate to PEC fields are having an even greater impact on applicants' corrections than the validation process itself, especially since nonvalidation applicants who meet the PEC are making large changes in response to edit comments.



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TABLE 4.4: MOST FREQUENTLY OCCURRING REJECTION REASONS

| Applicant Characteristic | % Who Have This Characteristic Who Have Always Been Rejected | |
|---|---|---|
| | Phases I/II | Phases III/IV |
| AGI - Unknown | 99.6% | 37.5% |
| HS - Unknown | 99.4 | 48.5 |
| PHE - Unknown | 98.0 | 45.3 |
| Earned Income - Unknown | 65.2 | 38.9 |
| Taxes Paid - Unknown | 57.0 | 34.0 |
| Marital Status - Deceased | 56.0 | 34.3 |
| Net Assets - Unknown | 46.1 | 33.1 |
| Marital Status - Unknown | 38.6 | 27.6 |
| Nontaxable Income - Unknown | 36.9 | 25.7 |
| AGI < 0 | 36.0 | 20.9 |
| Population Average | 16.2 | 12.9 |

## 4.3: IMPACT OF THE EDIT COMMENTS ON APPLICANTS' ELIGIBILITY STATUS

As mentioned in Section 4.2, there is concern that the processing system should not be excluding low-income, needy applicants. In order to address this concern we analyzed data on the status from previous to current transactions of applicants reporting various income and household data on their 1978-79 applications. The following table shows those characteristics most likely to have occurred with applications that were rejected on previous and current transactions relative to the Phases I/II data and the comparison of rejection rates with the later Phases III/IV data.

This table shows that the greatest cause of rejection is missing data on the application. In addition to missing data, a few other reported

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applicant characteristics result in relatively high rates of rejection --marital status "deceased" and negative AGI. Perhaps applicants are reporting marital "deceased" inconsistent with household size and/or portions earned. Applicants who report negative AGIs are not necessarily low income persons; they tend to report business losses as an offset to income. An even larger percentage of these applicants however, become eligible after a previous rejection. Phases III/IV data indicate that many applicants with missing data in Phases I/II are re-entering the system at a later time and changing their eligibility status from rejected to eligible or ineligible. The following table shows the current eligibility status for applicants who were previously rejected for these characteristics.

TABLE 4.5: CURRENT ELIGIBILITY STATUS OF APPLICANTS PREVIOUSLY REJECTED FOR CERTAIN CHARACTERISTICS, PHASES III/IV[1]

| Applicant Characteristic | % currently rejected, previously rejected | % currently eligible, previously rejected | % currently ineligible, previously rejected |
|---|---|---|---|
| AGI - Unknown | 37.5% | 41.1% | 21.2% |
| HS - Unknown | 48.5 | 37.2 | 14.2 |
| PHE - Unknown | 45.3 | 39.7 | 14.9 |
| Earned Income - Unknown | 38.9 | 33.2 | 10.5 |
| Taxes Paid - Unknown | 34.0 | 35.2 | 12.2 |
| Marital Status - Deceased | 34.3 | 36.7 | 7.2 |
| Net Assets - Unknown | 33.1 | 32.8 | 7.5 |
| Marital Status - Unknown | 27.6 | 27.3 | 8.7 |
| Nontaxable Income - Unknown | 25.7 | 26.6 | 17.8 |
| AGI < 0 | 20.9 | 67.2 | 7.1 |

[1]/The row totals do not add to 100% because the applicants who were not previously rejected are not included in the calculation of the percentages.

This table shows that applicants with missing values for household size and postsecondary education enrollment are most likely to stay rejected, followed by those with missing AGI or portions earned. Those who are



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rejected for reporting negative income have the greatest chance of later becoming eligible, and those who initially do not report nontaxable income, the least chance of becoming eligible. Applicants who were rejected for missing AGI and nontaxable income tend to later become ineligible more often than applicants rejected for other reasons.

The following table shows the application characteristics for which applicants have the highest rates of attaining eligibility after rejection, comparing the results for Phases I/II and III/IV.

TABLE 4.6: APPLICANTS MOST LIKELY TO BECOME ELIGIBLE AFTER REJECTION

| Applicant Characteristics Phases I/II | % Previously rejected, currently eligible | Applicant Characteristic Phases III/IV | % Previously rejected, currently eligible |
|---|---|---|---|
| AGI < 0 | 57.1% | AGI < 0 | 67.2% |
| PHE = 5+ | 27.7 | AGI Unknown | 41.1 |
| AGI = 1 - 1,000 | 27.1 | PHE Unknown | 39.7 |
| | | HS Unknown | 37.2 |
| | | Marital Status Deceased | 36.7 |
| | | PHE $\geq$ 5 | 35.7 |
| | | TP Unknown | 35.2 |

Based on this table we can conclude that applicants with negative income and key data fields missing are most likely to re-enter the system successfully.

To determine whether income range or application source is more highly related to application rejection rate, we compared the percentage of applicants from various income levels who are ever rejected and currently rejected with the results of Table 3.2 in Chapter 3.

This table shows that low income applicants may initially be excluded from the processing system. Applicants with negative, zero or missing income experience the highest overall rates of rejection, but, with the

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exception of those with missing income, are able to re-enter the system and attain eligibility at relatively high rates. On the other hand, applicants with low incomes -- from $1.00 to $4,000 -- remain rejected at slightly higher rates than those at other income levels. Applicants

TABLE 4.7: REJECTION RATES BY INCOME LEVEL, PHASES III/IV

| Income Level[1] | % Ever Rejected | % Currently Eligible | % Currently Rejected[2] |
|---|---|---|---|
| < 0 | 95.4 | 70.5 | 21.9 |
| 0 | 55.1 | 63.0 | 26.9 |
| 1 - 999 | 33.6 | 61.4 | 31.1 |
| 1,000 - 1,999 | 27.4 | 61.5 | 29.4 |
| 2,000 - 3,999 | 29.3 | 55.6 | 30.2 |
| 4,000 - 6,999 | 34.2 | 56.3 | 28.1 |
| 7,000 - 9,999 | 38.3 | 59.3 | 26.9 |
| 10,000 - 12,299 | 39.5 | 54.5 | 25.1 |
| 12,500 - 14,499 | 37.2 | 47.3 | 24.5 |
| 15,000 - 17,499 | 34.2 | 33.5 | 25.0 |
| 17,500 and above | 29.6 | 10.7 | 29.4 |
| Unknown | 100.0 | 41.4 | 37.6 |

1/Income refers to adjusted gross income only; nontaxable income is excluded.

2/These percentages are based on the number ever rejected.

with higher incomes are more likely to become ineligible than eligible after rejection. This suggests that the edits may have the effect of prolonging successful re-entry of low income applicants to the system.

CONCLUSION #1: Low income applicants may be excluded, to a slight extent, from the application processing system by edit rejections (or their successful re-entry prolonged). The greatest single cause of rejection is still missing data. The application source with the highest rejection rate -- CSS -- also has the highest

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incidence of missing data. In addition, CSS applicants tend to have higher incomes than those applying from other sources; and applicants who reported low income do not have significantly higher than average incidences of missing data. It should be noted that this conclusion is drawn largely from applicants who did report an income. Should the majority of applicants who failed to report an income really have a low income, then it would be concluded that low income applicants are being systematically excluded. Unfortunately, the statistical nature of this study precludes us from finding out the true income for applicants who failed to report an income. The Zero Income Study will provide answers to these questions.

CONCLUSION #2: Those applicants who were on the recipient file as of February, 1979, tended to reduce their award potential in response to processing system edits. All other applicants also made solicited corrections which, on the average, reduced their award potential. These trends pertain to all types of edit comments, except for those who receive edits not related to any new or tightened edit field; these applicants tend to decrease their EI more often than not, in responding to edits. There is some variation in the effect on EI by response mode, however. Applicants who verify in response to comment are more likely to reduce their EIs than those who change fields and are not rejected. No firm conclusions on applicants' solicited corrections behavior can be drawn until a much larger proportion of applicants is on the recipient file.

CONCLUSION #3: Edit comments which relate to PEC fields are eliciting frequent and large changes to applicants' eligibility indices, regardless of whether applicants are or are not selected for validation.

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TABLE 5.1: PERCENTAGE OF APPLICANTS CORRECTING KEY FIELDS PRE AND POST SELECTION (OR ELIGIBILITY) AND DIRECTION OF CHANGE, PHASES I/II AND III/IV

| VALIDATION APPLICANTS | | | | NONVALIDATION APPLICANTS | | | |
|---|---|---|---|---|---|---|---|
| Pre-Selection | | Post-Selection | | Pre-Eligibility | | Post-Eligibility | |
| Phases I/II | Phases III/IV | Phases I/II | Phases III/IV | Phases I/II | Phases III/IV | Phases I/II | Phases III/IV |
| AGI** 43.37 | AGI 41.52* | AGI 5.29* | AGI 16.0* | AGI 13.11* | AGI 14.91* | AGI 1.13** | AGI 1.51* |
| TP 19.13* | TP 18.52* | NTI 3.68* | TP 13.9* | TP 6.47* | TP 7.67* | NTI .97* | NTI 1.33* |
| NTI 17.04* | NTI 18.48** | TP 3.37* | NTI 10.2* | NTI 3.78* | NTI 5.09* | TP .63** | |
| HS 13.03* | HS 15.64** | HS 1.31* | HS 5.1* | NA 3.03* | NA 3.77* | NA .46** | |
| NA 9.34* | NA 10.53** | UE 1.18* | | UE 2.49* | | HS .44Ø | |
| PHE 6.35** | PHE 7.10** | NA .99* | | HS 1.83** | | | |
| | UE 7.09* | PHE .90* | | | | | |

1/ *Refers to corrections causing potential award decrease

2/ **Refers to corrections causing potential award increase

3/ Ø Refers to changes that do not influence the potential award amount

4/ __ Refers to change in direction of field change since Phases I/II.

## IMPACT OF VALIDATION
## CHAPTER 5 SUMMARY

Institution pre-award validation of approximately 4 percent of all applicants for the 1978-79 academic year was another procedure initiated by the Bureau of Student Financial Assistance this year. Most of the applicants were selected according to pre-established criteria (PEC discussed in Chapter 2) and some were selected at random.

The corrections behavior of validation applicants was compared to that of the remainder of the applicant population, to determine the impact of validation. Additionally, we attempted to distinguish the separate impact of validation and the processing system edits and applicants' corrections behavior. Following are the major findings of these analyses:

- Validation applicants are experiencing only slightly more difficulty in attaining recipient status than the total applicant population. Twenty-five percent of validation applicants, compared to 27 percent of all applicants were on the recipient file as of the end of February, 1979.
- Overall, validation applicants correct key data fields much more frequently than applicants not selected for validation (nonvalidation applicants). Sixty-eight percent of validation applicants correct key fields (those which affect computation of the eligibility index) prior to their selection for validation, and 32 percent after their selection, compared to 23 percent of nonvalidation applicants correcting prior to attaining eligibility and 4 percent post-eligibility.
- Among validation and nonvalidation applicants, however, those who meet the PEC correct key fields with similar frequencies. This indicated that the processing system edits (of which many are related to fields designated in the PEC) are soliciting appropriate corrections behavior, rather than validation.



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- More than 88 percent of all items to be validated were valid at the time of the applicants' selection for validation. This indicated that either the institutions are not validating, had not validated many applications as of February, 1979, or that the processing system edits are eliciting appropriate data prior to validation.
- Approximately 64 percent of all validation applicants had no transaction after their selection for validation. Twenty-seven percent of these applicants were on the recipient file, of which 96 percent were paid on the selection transaction. Fewer than 10 percent of all validation applicants had more than one post-selection transaction. Any one of the possible conclusions stated above could explain the paucity of post-selection transactions and the frequency of payment at selection.
- A summary analysis of the interaction of the effects of validation and the edits demonstrates that validation was obviated by the processing system edits with respect to 89 percent of the valid data items. There was some variation in validity of the items by field; however, validation was necessary to elicit valid data for household size in fewer than 4 percent of the cases, but in about 10 percent of the cases for taxes paid.

In summary, these analyses seem to indicate that validation is generally unnecessary due to the effectiveness of the processing system edits. However, a definitive conclusion cannot be drawn until the following questions are answered:

- What is the deterrent effect of validation on applicants' corrections behavior?
- Are the institutions really conducting validation, and if so, when?
- What is the accuracy of data reported by validation applicants compared to all other applicants, when the IRS data are substituted for BEOG-reported data?



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# 5

# IMPACT OF VALIDATION

## 5.1: KEY STUDY ISSUES

This Chapter has several purposes. The first purpose is to compare the corrections behavior of applicants selected for validation with that of applicants not selected. The second is to provide an indepth analysis of the effect of validation applicants' corrections on their expected award disbursement. Finally, this Chapter contrasts the impact of application source and processing system edits with that of validation on applicants' corrections and resultant changes in expected disbursement. Specifically, this Chapter provides answers to the following questions derived from the study issues:

- What is the difference between the percent of validation and nonvalidation applicants submitting corrections? Are there differences in impact on eligibility indices and in expected disbursements between the two groups?
- Which corrections are most likely made by validation applicants in response to validation? Which were most likely made in response to a comment? Is there variation in the frequency of receipt of, and response to, processing system edits by application source?
- Are the processing system edits causing validation applicants to erroneously correct fields to their disadvantage?
- How many transactions did validation applicants have before and after selection? On which transaction were they paid? Did they have subsequent transactions?

The study issues relating to the separate impact of application source and of processing system edits on applicants' corrections behavior were

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discussed in Chapters 3 and 4, respectively. This Chapter is concerned with separating the effects of the validation process from these other two changes in the application processing system, on applicants' corrections. This issue is addressed by the use of summary tables which compare and contrast the post selection corrections of validation applicants who received processing system edits by application source.

## 5.2: CORRECTIONS BEHAVIOR OF VALIDATION AND NONVALIDATION APPLICANTS COMPARED

This section presents the findings related to the corrections behavior of validation and nonvalidation applicants. Three elements of corrections behavior were compared for validation and nonvalidation applicants and their component subgroups (those who met the PEC, further categorized into A, B, and C groups, and the random group):

- the type of corrections made--fields changed and the direction (toward increased or decreased award amount) and magnitude of those changes;
- the number of fields corrected--whether applicants corrected a single or multiple fields;
- the timing of corrections--pre or post establishing eligibility or selection for validation.

A separate discussion of each of these elements is provided, as well as a summary of all elements relative to eligibility index changes, and changes in expected award amount.

The fields most frequently corrected by validation and nonvalidation applicants and the direction of change is summarized and compared for Phases I/II and III/IV in Table 5.1.

A review of this table shows that, in general, the percentage of validation and nonvalidation applicants submitting corrections has increased from Phases I/II (end of September data base) to Phases III/IV (end of February data base), both pre and post selection for validation or establishment of initial eligibility. The fields most frequently corrected in both Phases remain the same--AGI, TP, NTI, NA and HS--both pre and post selection (or eligibility). It also reveals that, pre

TABLE 5.1: PERCENTAGE OF APPLICANTS CORRECTING KEY FIELDS PRE AND POST SELECTION (OR ELIGIBILITY) AND DIRECTION OF CHANGE, PHASES I/II AND III/IV

| VALIDATION APPLICANTS | | | | REINVESTIGATION APPLICANTS | | | |
|---|---|---|---|---|---|---|---|
| Pre-Selection | | Post-Selection | | Pre-Eligibility | | Post-Eligibility | |
| Phases I/II | Phases III/IV | Phases I/II | Phases III/IV | Phases I/II | Phases III/IV | Phases I/II | Phases III/IV |
| AGI** 43.37 | AGI 41.52* | AGI 6.29* | AGI 16.0* | AGI 13.11* | AGI 14.91* | AGI 1.13** | AGI 1.51* |
| IP 19.13* | IP 18.52* | NTI 3.68* | IP 13.9* | IP 6.47* | IP 7.67* | NTI .97* | NTI 1.33* |
| NTI 17.04* | NTI 18.48** | IP 3.37* | NTI 10.2* | NTI 3.78* | NTI 5.09* | IP .63** | |
| HS 13.03* | HS 15.64** | HS 1.31* | HS 5.1* | NA 3.03* | NA 3.77* | NA .46** | |
| NA 9.34* | NA 10.53** | UE 1.18* | | UE 2.49* | | HS .44β | |
| PHE 6.35** | PHE 7.10** | NA .99* | | HS 1.83** | | | |
| | UE 7.09* | PHE .90* | | | | | |

1/ *Refers to corrections causing potential award decrease

2/ **Refers to corrections causing potential award increase

3/ βRefers to changes that do not influence the potential award amount

4/ _ Refers to change in direction of field change since Phases I/II.

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selection, applicants tend to correct NTI, HS, NA and PHE to their advantage, but AGI to their disadvantage--reversals from the earlier findings. Post selection corrections however, tend to be similar in direction of change as those reported earlier. Nonvalidation applicants have changed their post eligibility corrections behavior with regard to AGI; they now tend to correct AGI to their disadvantage. Several conclusions can be drawn from these data:

CONCLUSION #1: There are no notable changes in the fields most frequently corrected by each applicant subgroup pre- or post selection (or eligibility). Generally, for both sets of findings, the key fields can be divided into three groups, as follows:

| Most Frequently Corrected | Occasionally Corrected | Rarely Corrected |
|---|---|---|
| AGI | PHE | UT |
| TP | UE | SSA |
| NTI | VEB | AR |
| HS | | |
| NA | | |

Overall, the percentage of validation applicants correcting these key fields post selection has significantly increased. This is not the case, however, for nonvalidation applicants.

CONCLUSION #2: Validation applicants tend to correct fields to their advantage pre selection and to their disadvantage post selection.

CONCLUSION #3: Overall, nonvalidation applicants are correcting to their disadvantage pre- and post eligibility. Validation applicants generally correct (NTI, HS, NA, PHE) to their advantage pre selection and (AGI, TP, UE) to their disadvantage prior to selection.

CONCLUSION #4: Validation applicants submit approximately two and one-half to three times as many corrections both pre and post selection as nonvalidation applicants pre and post eligibility. Validation and nonvalidation applicants also differ with regard to the direction of changes made to key fields. Validation applicants change some fields to their advantage and some to their disadvantage pre selection, and all fields (at

least those corrected by five percent or more of the applicants) to their disadvantage post selection. Nonvalidation applicants, on the other hand, tend to correct key fields to their disadvantage both pre and post establishing eligibility. Thus, the few nonvalidation applicants who are submitting corrections after establishing eligibility are behaving similarly to the validation applicants.

Another indicator of possible effects of validation on corrections behavior is the number of fields corrected by validation and nonvalidation applicants; that is, whether validation applicants are correcting multiple fields with greater frequency than nonvalidation applicants.

Table 5.2 shows the percentage of validation and nonvalidation applicants who corrected only one field after their selection for validation or establishment of initial eligibility. Corresponding average effective eligibility index changes are also shown for each field. The eligibility index changes shown in this table relate to changes to one field only. It should be remembered that other references to eligibility index changes in this report, for the most part, relate to more than one field. This table shows that for both sets of data, applicants most often corrected the following single fields post selection (or eligibility):

| Validation Applicants | Nonvalidation Applicants |
|---|---|
| NTI | VEB |
| TP | NTI |
| VEB | PHE |
| HS | SSA |
| AGI | NA |
| | UT |
| | HS |

Overall, validation applicants are somewhat less likely than nonvalidation applicants to correct one field only after selection or eligibility. Moreover, the direction of resulting changes in eligibility indices was generally positive (award decrease) for validation applicants

TABLE 5.2: PERCENT OF APPLICANTS CORRECTING ONE FIELD ONLY SINCE SELECTION (OR ELIGIBILITY) AND AVERAGE EFFECTIVE ELIGIBILITY INDEX CHANGES BY FIELD, PHASES I/II AND PHASES III/IV

| FIELD | VALIDATION APPLICANTS | | | | | REVALIDATION APPLICANTS | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | % of those correcting this field post selection who corrected this field only | | | | % of those correcting post eligibility who corrected this field only | | | |
| | Total # All applicants Correcting This Field Since Selection | Phases I/II % | % Effective EI Change | Phases III/IV % | % Effective EI Change | Phases I/II % | % Effective EI Change | Phases III/IV % | % Effective EI Change |
| SS | 19,234 | 18.7 | + 64 | 15.6 | +106 | 31.7 | + 64 | 22.7 | + 73 |
| PSE | 13,510 | 16.6 | + 32 | 13.2 | + 62 | 28.1 | + 70 | 27.8 | + 16 |
| AS | 3,555 | 11.7 | +171 | 7.3 | - 4 | 15.2 | +114 | 13.1 | +196 |
| ASI | 10,610 | 21.0 | +514 | 13.3 | +404 | 17.6 | + 23 | 16.8 | - 4 |
| FUNTIONS | 16,990 | 5.8 | - 3 | 3.0 | - 7 | 7.7 | - 8 | 6.1 | - 9 |
| TP | 14,185 | 28.4 | + 75 | 29.0 | + 78 | 18.7 | - 4 | 32.8 | + 8 |
| VFI | 19,015 | 45.9 | + 36 | 37.0 | + 58 | 45.7 | + 25 | 67.8 | + 98 |
| RA | 15,287 | 16.7 | + 23 | 11.0 | + 88 | 38.9 | - 11 | 24.3 | + 79 |
| SSA | 7,154 | 15.2 | 0 | 8.7 | 0 | 32.4 | + 6 | 28.4 | - 4 |
| VRB | 4,033 | 27.0 | + 88 | 21.9 | + 83 | 49.5 | + 19 | 47.9 | + 66 |
| UR | 13,095 | 12.3 | + 51 | 7.6 | + 27 | 13.1 | - 15 | 11.4 | + 43 |
| VT | 2,391 | 8.4 | - 5 | 7.8 | + 94 | 25.5 | + 63 | 23.2 | +256 |



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and somewhat less frequently positive for nonvalidation applicants. It can be seen that nonvalidation applicants tended to make negative changes (award increase) through Phases I/II, but have skewed the general direction of changes toward the positive through Phases III/IV. Perhaps their corrections behavior was influenced by the validation process in their institutions or perhaps some institutions are conducting validation of all Basic Grant applicants. The largest potential award decreases arise from validation applicants who correct only AGI or nonvalidation applicants correcting only unreimbursed tuition, while the largest potential award increases are due to nonvalidation applicants correcting only applicant resources.

With regard to applicants making multiple corrections post selection or eligibility, we asked several questions:

1) Do validation or nonvalidation applicants make more multiple corrections?

2) Which multiple corrections result in the highest EI changes for validation and nonvalidation applicants?

3) What is the predominant direction of EI change for validation and nonvalidation applicants?

To answer these questions, we examined the number of applicants correcting a given field, with corresponding changes in applicants' eligibility indices. Table 5.3 demonstrates the combination of fields corrected with the greatest frequency by validation and nonvalidation applicants.

This table shows that validation applicants more frequently submit multiple corrections since selection than nonvalidation applicants since eligibility. It also shows that applicants correcting fields other than AGI and Portions often correct either of these fields in combination with other fields.

TABLE 5.3: COMBINATIONS OF FIELDS CORRECTED WITH THE GREATEST FREQUENCY POST SELECTION OR ELIGIBILITY PHASES III/IV[1/]

| VALIDATION APPLICANTS | | NON VALIDATION APPLICANTS | |
|---|---|---|---|
| Field Combinations | % Correcting | Field Combinations | % Correcting |
| Portions with AGI | 87.7 | Portions with AGI | 85.9 |
| SSA with NTI | 72.4 | TP with AGI | 67.2 |
| AR with AGI | 66.4 | AGI with Portions | 65.8 |
| UE with AGI | 63.9 | AR with NA | 61.2 |
| AR with Portions | 63.1 | UE with AGI | 58.7 |
| AGI with Portions | 62.1 | SSA with NTI | 55.9 |
| UT with AGI | 62.0 | AR with AGI | 54.4 |
| AR with NA | 61.4 | TP with Portions | 54.1 |
| NA with AGI | 55.7 | UE with Portions | 54.0 |
| UE with TP | 55.6 | PHE with HS | 50.6 |
| UE with Portions | 55.3 | AR with Portions | 50.1 |
| TP with AGI | 54.7 | | |
| UT with Portions | 52.3 | | |
| UT with TP | 52.0 | | |
| NA with Portions | 50.3 | | |
| VEB with NTI | 50.2 | | |

[1/] The percentages refer to applicants correcting the first-listed field who also corrected the second-listed field. The reverse cannot be assumed, as can be seen with Portions and AGI and AGI and Portions.

Another interesting trend in corrections behavior appears in the direction and magnitude of EI changes resulting from multiple field corrections. Table 5.4 shows the distinctly different behavior of validation and nonvalidation applicants.

TABLE 5.4: MAGNITUDE OF ELIGIBILITY INDEX CHANGES RESULTING FROM MULTIPLE FIELD CORRECTIONS, PHASES III/IV[1]

| Validation Applicants | | Nonvalidation Applicants | |
|---|---|---|---|
| AGI with TP | + 329 | NTI with VEB | + 218 |
| TP with AGI | + 329 | VEB with NTI | + 218 |
| AGI with UE | + 284 | | |
| TP with UE | + 284 | | |
| UE with AGI | + 284 | | |
| UE with TP | + 284 | | |
| Portions with TP | + 279 | | |
| TP with Portions | + 279 | | |
| TP with NA | + 279 | | |
| NA with TP | + 279 | | |
| AGI with NA | + 258 | | |
| NA with AGI | + 258 | | |

[1]/The criterion for table entry was an increase to EI of 250 points; however, there were no nonvalidation applicants who met this criterion, so 200 points was used as the cut off for these applicants.

We can conclude, from the information in this table, that validation and nonvalidation applicants correcting multiple fields since selection or eligibility affect their eligibility indices quite differently. Validation applicants tend to make corrections to their disadvantage, while nonvalidation applicants in this category for the most part, make corrections which increase their award potential. Many more combinations of fields corrected result in EI increases for validation applicants than for nonvalidation applicants.

Finally, we discuss the frequency with which applicants submit corrections to critical fields pre and post selection for validation (or establishment of initial eligibility, for nonvalidation applicants).

Previous sections contained information based on applicants' corrections to all fields. The percentage of applicants correcting critical fields (the basis for Table 5.5) is smaller than that correcting all fields (8.1 percent of all applicants post selection, and 35.6 percent of validation applicants post selection), as was expected. However, it was considered important to isolate corrections behavior relative to critical fields.

The timing of corrections is a key study variable because the effect of validation should be seen in corrections submitted after selection, for validation applicants. Therefore, we would expect a greater percentage of validation than nonvalidation applicants to submit corrections post selection (or establishment of initial eligibility) if validation is: (1) selecting applicants who misreport information and (2) being conducted appropriately.

The following table shows the percentage of applicants in each applicant subgroup making corrections pre and post selection or initial eligibility, compared for Phases I/II and III/IV.

We can draw several conclusions from the information contained in this table:

CONCLUSION #5: Applicants who meet the validation criteria are submitting more corrections prior to establishing eligibility and prior to selection than are the applicants who do not meet the PEC. This is largely due to the fact that submission of a correction is a prerequisite for validation selection according to the PEC. Post selection (or eligibility), validation applicants submit corrections much more frequently than nonvalidation applicants. It is also interesting to note that the random validation applicants are submitting post selection corrections at a much greater rate than earlier data had indicated.

CONCLUSION #6: Post selection more than 40 percent of validation applicants meeting the following criteria submitted corrections:

| | |
|---|---|
| A6 | A10 |
| A2 | B3 |

There is a marked difference between the percent of validation and nonvalidation applicants submitting post selection corrections to critical fields.

We can draw several conclusions from the information contained in this table:

TABLE 5.5: PERCENT OF APPLICANTS SUBMITTING CORRECTIONS TO CRITICAL FIELDS PRE AND POST SELECTION OR INITIAL ELIGIBILITY

| | VALIDATION APPLICANTS | | | | NONVALIDATION APPLICANTS | | | |
|---|---|---|---|---|---|---|---|---|
| Criteria Group | % Correcting Pre-Selection | | % Correcting Post-Selection | | % Correcting Pre-Eligibility | | % Correcting Post Eligibility | |
| | Phases I/II | Phases III/IV | Phases I/II | Phases III/IV | Phases I/II | Phases III/IV | Phases I/II | Phases III/IV |
| Total Applicants | 33.2 | 67.6 | 5.4 | 31.8 | 9.8 | 23.1 | 1.5 | 3.6 |
| PEC | 35.9 | 73.4 | 5.4 | 32.9 | 35.6 | 71.1 | 1.5 | 4.4 |
| PEC A | 33.7 | 66.8 | 4.2 | 35.0 | 35.4 | 70.6 | 1.5 | 4.4 |
| A1 | 49.5 | 99.7 | 4.6 | 27.9 | 49.5 | 99.5 | 1.8 | 4.3 |
| A2 | 18.6 | 40.5 | 9.3 | 43.2 | 41.1 | 82.5 | 2.0 | 5.6 |
| A3 | 14.2 | 30.8 | 8.6 | 39.0 | 17.4 | 40.2 | 1.5 | 5.2 |
| A4 | 13.6 | 30.0 | 5.5 | 30.0 | 7.0 | 17.9 | 1.1 | 3.8 |
| A5 | 13.6 | 30.1 | 5.5 | 30.1 | 7.0 | 17.9 | 1.1 | 3.8 |
| A6 | 22.7 | 45.4 | 5.2 | 46.3 | 19.2 | 51.1 | 2.1 | 6.8 |
| A7 | 48.5 | 97.4 | 4.6 | 32.4 | 47.5 | 93.9 | 2.1 | 6.6 |
| A8 | 49.9 | 99.9 | 3.2 | 30.5 | 49.6 | 99.1 | 1.7 | 4.8 |
| A9 | 49.7 | 99.6 | 3.8 | 28.6 | 50.0 | 97.5 | 2.4 | 12.1 |
| A10 | 36.7 | 76.3 | 7.6 | 41.9 | 34.4 | 72.0 | 3.4 | 8.0 |
| PEC B | 49.6 | 99.3 | 4.1 | 25.3 | 49.5 | 98.6 | 2.3 | 1.9 |
| B1 | 46.9 | 96.2 | 3.8 | 26.0 | 48.9 | 97.6 | 2.8 | 6.2 |
| B2 | 49.6 | 99.3 | 4.4 | 25.3 | 49.6 | 98.8 | 2.2 | 3.6 |
| B3 | 50.0 | 100.0 | 0.0 | 41.3 | 0.0 | 100.0 | 0.0 | 33.3 |
| PEC C | 40.0 | 98.2 | 18.3 | 24.3 | 49.6 | 97.3 | 4.6 | 22.1 |
| C1 | 48.5 | 97.0 | 1.9 | 24.0 | 49.5 | 99.0 | 4.6 | 11.7 |
| C2 | 39.0 | 98.5 | 22.3 | 24.4 | 50.0 | 96.1 | 4.5 | 32.0 |
| C3 | 43.1 | 100.0 | 29.5 | 18.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Random | 12.1 | 28.8 | 6.0 | 24.1 | 5.4 | 13.3 | 1.4 | 3.4 |

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CONCLUSION #7: Nonvalidation applicants meeting the PEC correct critical fields pre eligibility with approximately the same frequency as validation applicants selected according to the PEC. This suggests that applicants who meet the PEC are probably receiving similar edits and submitting solicited corrections with about the same frequency.

CONCLUSION #8: The major differences between the corrections behavior of validation and nonvalidation applicants can be stated as follows:

- The direction of changes to critical fields is toward decreased award amount for validation applicants post selection and toward increased award amount for nonvalidation applicants post eligibility. Also, the changes to fields made by applicants pre selection or eligibility tend to be of larger magnitude than those made by post selection or eligibility.
- Pre selection and pre eligibility the most frequent and largest corrections tend to be made to those fields which have tightened edits (AGI, TP, NTI, VEP etc.). This suggests that the tightened edits are working.
- Relatively few of the random group (compared to PEC applicants) submitted pre selection or eligibility corrections. Those who did, however, tended to decrease award potential.
- Nonvalidation applicants who submit corrections tend to correct to their disadvantage pre eligibility and to their advantage post eligibility. Many nonvalidation applicants have made substantial changes to critical fields which have potential for decreasing award amount. This has apparently occurred independent of the validation effort and may be attributed to the tightened edits, or, it may be a side effect of validation.
- Applicant resources, net assets, and veteran's benefits are the fields that nonvalidation applicants are consistently correcting to their advantage both pre and post eligibility. The magnitude of changes to these fields pre eligibility are generally very large. The largest changes (decreases) in eligibility indices occur for all applicants correcting applicant resources or social security benefits in combination with other fields.



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- Validation applicants more frequently submit corrections to multiple fields after selection than nonvalidation applicants after establishing eligibility. AGI and portions are the fields most often corrected in combination with other fields.

These findings were stated in the report on Phases I/II analysis. They are substantiated by the Phases III/IV data, and are indications of general trends in applicants' corrections behavior.

## 5.3: IMPACT OF VALIDATION ON APPLICANTS' AWARD POTENTIAL

This section discusses the validation process relative to applicants' payment status. The impact of validation is not separated from the impact of the processing system edits; the final section of this chapter synthesizes the various types of impact data and draws conclusions about the relative impact of each of the processing system changes on applicants' award potential. In this section, the following study issues are discussed.

(1) What is the comparative validity of the validation fields and at what point in the application processing system are they valid?

(2) What percentage of validation applicants are expected to be paid (i.e., on the recipient file)? What is the average change in eligibility index and expected disbursement from the selection transaction to the payment transaction? and

(3) On which transaction were validation applicants paid?

Answers to these questions provide indications of the type of impact validation might be having on applicants' award potential.

The application items that were analyzed with respect to validity are:

- AGI
- Sum of Portions
- Taxes Paid
- Nontaxable Income
- Post High Enrollments
- Household Size
- Dependency Status



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For this analysis, applicants were grouped according to whether they are expected to be paid or not expected to be paid (i.e., not on the recipient file). As of the end of February, 1979, only 25 percent of all validation applicants were expected to be paid. Obviously, many applications had not completed the processing cycle by this time. For the two groups of applicants, we then examined the data items for validity. Several categories were established:

1) those that were always valid;
2) those that were valid at selection and invalid at least once pre selection;
3) those that were invalid at selection but always valid pre selection; and
4) those that were invalid at selection and invalid at least once pre selection.

Table 5.6 summarizes the results of this analysis.

This table demonstrates that, for those currently on the recipient file, the vast majority of validated items were already valid on the applicants' selection transaction. Furthermore, the majority of those items were also always valid pre selection, except dependency status, which was only valid on 13 percent of the applications pre selection. Household fields, including PHE and HS, have the highest incidence of validity, both at selection and pre selection. The chief financial fields--AGI and TP--tend to be invalid at selection slightly more frequently than other fields. These items are also most often invalid at least once prior to selection. Of those who are not on the recipient file, over 80 percent have not corrected any of the validated items after their selection. These data suggest that the edits are causing most applicants to make needed corrections prior to their selection for validation, and that validation may have been unnecessary for many of them. In light of the apparent validity of most data items, it seems odd that only 25 percent of validation applicants were on the recipient file



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TABLE 5.6: TRANSACTIONAL ANALYSIS OF VALIDATION APPLICANTS' ESTABLISHMENT OF VALID APPLICATIONS

| | Total Applicants | AGI | Sum of Portions | TP | NTI | PHE | HS |
|---|---|---|---|---|---|---|---|
| Expected To Be Paid | 30,354[1]<br>25.34% | 30,354 | 30,354 | 30,354 | 30,354 | 30,354 | 30,354 |
| # Valid at Selection | | 26,752<br>88.12%[1] | 27,802<br>91.58%[1] | 27,084<br>89.22%[1] | 27,599<br>90.91%[1] | 29,647<br>97.66%[1] | 29,289<br>96.48%[1] |
| % Always Valid Pre Selection | | 42.60[2] | 66.87[2] | 63.15[2] | 59.62[2] | 83.45[2] | 76.72[2] |
| % Invalid at Least Once Pre Selection | | 48.02[2] | 23.89[2] | 27.26[2] | 31.33[2] | 7.28[2] | 13.95[2] |
| # Invalid at Selection | | 3,605<br>11.88% | 2,553<br>8.42% | 3,273<br>10.78% | 2,758<br>9.09% | 710<br>2.34% | 1,068<br>3.52% |
| % Always Valid Pre Selection | | 68<br>1.89 | 135<br>5.28 | 76<br>2.32 | 89<br>3.23 | 112<br>15.77 | 95<br>8.90 |
| % Invalid at Least Once Pre Selection | | 3,229<br>89.37 | 2,174<br>85.09 | 2,977<br>90.96 | 2,350<br>85.21 | 532<br>74.93 | 889<br>83.24 |
| Not Yet On Recipient File | 89,435<br>74.66% | 89,435 | 89,435 | 89,435 | 89,435 | 89,435 | 89,435 |
| % Did Not Correct This Field Post Selection | | 81.77 | 87.00 | 83.66 | 88.02 | 95.85 | 93.78 |

1/ This total includes applicants who are currently eligible, ineligible and rejected.

2/ All percentages are column percents.

3/ These two percentages in each column do not necessarily add to 100 due to the presence of some random validation applicants who had no pre selection transactions.

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as of the end of February, 1979. There are several possible explanations for this seeming inconsistency: (1) that the institutions are not validating applications; (2) that many students are not submitting SERs out of fear of validation; or (3) that validation was conducted later than expected and many applicants experienced delay in their processing. These hypotheses are further explored in Section 5.4 of this Chapter.

To determine the impact on validation applicants' eligibility indices and expected disbursements of the validation process, we examined the mean change in these two indicators from the transaction at selection to the payment transaction. For this analysis, as in the previous analysis, applicants were classified according to whether they are expected to be paid or are not yet on the recipient file. Tables 5.7 and 5.8 demonstrate the difference in estimated payment (for those not yet on the recipient file) and in expected disbursement (for those expected to be paid) between the selection and payment (or latest, in the case of those not on the recipient file) transactions for currently eligibile validation applicants.

The major finding in this analysis is that eligible applicants who are on the recipient file tend to have reduced their award potential by an even greater average amount than those who are not yet on the recipient file. The net effect of <u>all</u> currently eligible validation applicants' corrections, however, is to decrease the award potential. It would be necessary to re-examine the data base as of the end of May to determine whether these preliminary findings concerning validation applicants are substantiated. It should be re-emphasized that only 25 percent of all validation applicants were on the recipient file as of the end of February, 1979. In summary, the impact of validation and applicants' corrections since selection consists of the components highlighted in Table 5.9.

TABLE 5.7: DIFFERENCE IN ESTIMATED PAYMENT BETWEEN SELECTION AND PAYMENT TRANSACTIONS FOR THOSE NOT YET ON RECIPIENT FILE[1/]

| Criterion | # Of Currently Eligible Applicants Who Are Not Yet On The Recipient File | $\bar{X}$ Difference In Current and Selection Estimated Payment | Total Difference In Estimated Payment |
|---|---|---|---|
| Total Validation | 84,346 | -12.9 | -1,088,063 |
| PEC A | 58,203 | -15.2 | - 884,685 |
| A1 | 6,185 | + .3 | + 1,855 |
| A2 | 8,634 | -50.2 | - 433,426 |
| A3 | 6,509 | -36.7 | - 238,880 |
| A4 | 11,896 | - 7.5 | - 89,220 |
| A5 | 11,847 | - 7.5 | - 88,852 |
| A6 | 15,256 | -47.5 | - 724,660 |
| A7 | 8,111 | + 3.7 | + 30,010 |
| A8 | 14,279 | 0 | 0 |
| A9 | 1,279 | - 8.6 | - 10,999 |
| A10 | 357 | -10.9 | - 3,891 |
| PEC B | 11,062 | - 8.8 | - 97,345 |
| B1 | 141 | + 3.1 | + 437 |
| B2 | 10,923 | - 9.0 | - 98,307 |
| B3 | 21 | -32.1 | - 674 |
| PEC C | 5,143 | -18.1 | - 93,088 |
| C1 | 1,158 | -10.7 | - 12,390 |
| C2 | 3,987 | -20.2 | - 80,537 |
| C3 | 9 | -41.7 | - 375 |
| Random | 10,914 | - 2.0 | - 21,828 |

[1/] The difference is calculated by subtracting the estimated payment that the applicants would have been paid on the selection transaction from the estimated payment for the current transaction. This calculation is based on currently eligible applicants only. A negative mean difference is indicative of savings to OE; a positive difference, of savings to the applicant.



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TABLE 5.8: DIFFERENCE IN EXPECTED PAYMENT FROM SELECTION TO PAYMENT TRANSACTION FOR THOSE EXPECTED TO BE PAID

| Criterion | # Of Currently Eligible Applicants Who Are Expected To Be Paid | $\bar{X}$ Difference In Expected Payment From Selection To Payment[1/] | Total Difference In Expected Payment |
|---|---|---|---|
| Total Validation | 29,387 | - 17.5 | -523,022 |
| PEC A | 19,754 | - 13.1 | -258,777 |
| A1 | 1,463 | + 2.7 | + 3,950 |
| A2 | 3,743 | - 47.3 | -177,043 |
| A3 | 3,004 | - 27.1 | - 81,408 |
| A4 | 2,965 | - 2.9 | - 8,598 |
| A5 | 2,954 | - 2.9 | - 8,566 |
| A6 | 4,847 | - 41.1 | -199,211 |
| A7 | 3,025 | + 5.7 | + 17,242 |
| A8 | 5,754 | - .5 | - 2,877 |
| A9 | 368 | - 42.9 | - 15,787 |
| A10 | 91 | - 4.2 | - 382 |
| PEC B | 3,782 | - 8.1 | - 30,634 |
| B1 | 40 | - 22.5 | - 900 |
| B2 | 3,747 | - 8.0 | - 29,976 |
| B3 | 7 | + 4.0 | + 28 |
| PEC C | 2,464 | -112.1 | -276,214 |
| C1 | 555 | - 89.2 | - 49,506 |
| C2 | 1,918 | -118.5 | -227,283 |
| C3 | 2 | 0 | 0 |
| Random | 4,272 | - .9 | - 3,844 |

1/ The difference in expected payment is calculated by subtracting the value at selection from the value at payment, for currently eligible applicants only. A negative mean difference is indicative of savings to OE; a positive difference of savings to the applicant.

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TABLE 5.9: SUMMARY OF IMPACT ON AWARD POTENTIAL OF VALIDATION APPLICANTS' CORRECTIONS SINCE SELECTION

| REDUCED AWARD POTENTIAL (OR SAVINGS) | | | | INCREASED AWARD POTENTIAL (OR LOSS) | | | |
|---|---|---|---|---|---|---|---|
| | # | PAYMENT (OR CHANGE)[2/] | TOTAL REDUCED AWARD | | # | PAYMENT (OR CHANGE) | TOTAL INCREASED AWARD |
| Current Eligibles, not on recipient file[1/] | 84,346 | $-12.9 | $-1,088,063 | Current ineligibles, on recipient file | 91 | $850.1 | $ 77,413 |
| Current Eligibles, on recipient file | 29,887 | $-17.5 | - 523,022 | Current rejected applicants, on recipient file | 373 | 1020 | $380,831 |
| Current Ineligibles, not on recipient file | 3,085 | $-760.6 | -2,346,842 | | | | |
| Current rejected applicants, not on recipient file | 2,004 | -- | -- | | | | |
| TOTAL | | | $-3,957,927 | | | | $458,244 |
| | | NET IMPACT = | $3,499,683 | | | | |

1/ This is based on the assumption that all currently eligible applicants will eventually receive an award. Since it is likely that not all of these applicants will achieve recipient status, these savings are underestimated to an unknown extent.

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We further conclude, on the basis of the information in Tables 5.7 through 5.9, that:

CONCLUSION #9: For applicants who are expected to be paid, those meeting the following criteria reduced their award by the greatest average amount from selection to payment:

- C2
- C1
- A2
- A9
- A6

CONCLUSION #10: For applicants who are not yet on the recipient file, the estimated award was reduced by an average of more than 30 dollars from selection to current transaction by those meeting the following criteria:

- A2
- A6
- C3
- A3
- B3

This indicates that applicants meeting these criteria are making larger post selection corrections to their disadvantage than applicants meeting other criteria, a conclusion which is supported by the analysis in Chapter 2.

CONCLUSION #11: Overall, the validation process and edit system are resulting in reduced award potential for validation applicants. However, the bulk of the estimated savings to OE is for ineligible applicants not on the recipient file, rather than for reductions in award potential by eligible applicants. Since only 25 percent of the validation applicants were on the recipient file for these analyses, the data are too preliminary to report true impact.

We also attempted to determine whether there were variations in applicants' current eligibility status and corrections behavior by recipient status. This analysis compares the total validation population with the random validation group as well. Table 5.10 which follows, demonstrates that random validation applicants, as a group, make changes after selection which only slightly reduce their award potential regardless of whether they have attained recipient status; whereas, the total validation population makes changes which substantially reduce their award potential. This table also shows that the percent of

TABLE 5.10: ELIGIBILITY STATUS AND CORRECTIONS BEHAVIOR OF APPLICANTS BY APPLICANTS' RECIPIENT STATUS

| | # (NOT YET) ON RECIPIENT FILE | % OF TOTAL | NOT YET ON RECIPIENT FILE: # (NOT) ON FILE WHO MADE CORRECTIONS | NOT YET ON RECIPIENT FILE: % OF THOSE (NOT) ON FILE | NOT YET ON RECIPIENT FILE: # OF ELIGIBLES (NOT) ON FILE | NOT YET ON RECIPIENT FILE: % (NOT) ON FILE WHO ARE ELIGIBLE | NOT YET ON RECIPIENT FILE: $\bar{X}$ CHANGE IN EXPECTED AWARD | NOT YET ON RECIPIENT FILE: # OF ELIGIBLES (NOT) ON FILE WHO MADE CORRECTIONS | NOT YET ON RECIPIENT FILE: % OF ELIGIBLES (NOT) ON FILE WHO MADE CORRECTIONS | NOT YET ON RECIPIENT FILE: $\bar{X}$ CHANGE IN EXPECTED AWARD |
|---|---|---|---|---|---|---|---|---|---|---|
| VALIDATION APPLICANTS TOTAL | 89,435 | 76.66 | 33,461 | 37.4 | 84,346 | 94.31 | $-12.9 | 28,353 | 33.6 | $-38.3 |
| RANDOM VALIDATION APPLICANTS | 11,111 | 77.38 | 3,832 | 27.7 | 10,913 | 96.69 | - 2.0 | 2,735 | 25.1 | - 7.9 |
| | | | EXPECTED TO BE PAID | | | | | | | |
| VALIDATION APPLICANTS TOTAL | 28,454 | 25.34 | 6,532 | 23.5 | 29,886 | 98.46 | -17.5 | 6,200 | 20.7 | -36.0 |
| RANDOM VALIDATION APPLICANTS | 4,117 | 22.62 | 1,169 | 27.4 | 4,272 | 98.98 | - .9 | 1,124 | 26.3 | - 1.9 |

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eligibles making post selection corrections is slightly less than when ineligible and rejected applicants are included with eligibles, both the random and total validation groups, regardless of recipient status. Approximatey 63 percent of the total validation group and 72 percent of the random validation group who are not yet on the recipient file submit corrections after their selection for validation. For those who have attained recipient status, the post-selection corrections are even less frequent--21 percent of the total validation group, and 27 percent of the random group. It is interesting to note that the PEC validation applicants who were on the recipient file as of the end of February, 1979, have submitted fewer corrections than the random group. This suggests that the applicants with the lowest potential award reductions have been relatively early in attaining recipient status, and that, conversely, those with the largest potential reductions will be last to enter the recipient file.

We also examined the timing of expected award payment relative to the selection transaction. For this analysis, validation applicants were classified according to whether they met PEC A, B or C criteria, or whether they were randomly selected. Again, the applicants were grouped according to whether they are or are not expected to be paid. Table 5.11 highlights the results of this analysis.

This table reveals that the majority (64%) of validation applicants had no transactions after selection. Approximately one-fourth of the validation applicants had one transaction subsequent to selection and fewer than 10 percent had two or three subsequent transactions. Fewer than one percent of all validation applicants had four or more transactions after selection--but this amounts to almost 1,000 applicants. Those who are not on the recipient file tend to have a greater number of transactions after selection than those who are expected to be paid. This provides support for the hypothesis that applicants not on the recipient file as of February, 1979, have more problems in processing their applications.

For those applicants who are expected to be paid, we analyzed the degree of coincidence of the payment transaction and the latest transaction. Table 5.11 shows that applicants who have two or more transactions after selection tend, more often than those with fewer than two transactions after selection, to be paid on an earlier transaction. Only 1.1 percent of those whose last transaction was at selection were paid on a prior transaction, whereas nearly 8 percent of those who had two or more transactions after selection were paid prior to their latest transaction. Those whom we would suspect had been paid prior to validation would be those paid on a transaction prior to selection. In Table 5.11, the following types would meet this condition:

(1) last transaction is at selection, were paid on an earlier transaction;

(2) last transaction is one after selection, were paid on two or more transactions prior to latest;

(3) last transaction is two or more after selection, were paid on more than two prior to selection.

Following is a summary of applicants who meet these conditions:

| Condition | # of Applicants Who Meet Condition | % of Total with This Last Transaction |
|---|---|---|
| (1) | 827 | 1.1% |
| (2) | 166 | .55% |
| (3) | 154 | 1.23% |
| Total all conditions | 1,147 | % of Total .95% |

These represent applicants who were probably paid without being validated or who are undergoing validation after payment. The remainder of applicants who were paid on a transaction prior to their latest constitutes an additional 2.1 percent of the total of validation applicants. These applicants may have undergone validation, but nevertheless are submitting corrections to their application after they have been entered onto the recipient file. These applicants are most likely trying to increase their award potential and may be applying to

TABLE 5.11: TRANSACTIONAL ANALYSIS OF EXPECTED AWARD PAYMENT TO VALIDATION APPLICANTS

| | | LAST OFFICIAL TRANSACTION IS: | | | | |
|---|---|---|---|---|---|---|
| | | | After Selection | | | |
| | Total | Transaction At Selection | 1 | 2 | 3 | 4 | More Than 4 |
| T al Validation | 119,790 1/<br>100.0% 1/<br>100.0% 2/ | 77,170<br>64.4% | 30,120<br>25.2% | 9,156<br>7.6% | 2,411<br>2.0% | 685<br>.6% | 248 3/<br>.2% 3/ |
| F Tat on Recipient F a | 89,435 1/<br>100.0% 1/<br>74.66% 2/ | 55,993<br>62.6<br>72.5 | 23,063<br>25.8<br>76.5 | 7,438<br>8.3<br>81.2 | 2,101<br>2.4<br>87.2 | 613<br>.68<br>89.5 | 227<br>.25<br>91.5 |
| E ected To Be Paid | 30,334<br>100.0%<br>25.34 | 21,176<br>69.8<br>27.5 | 7,057<br>23.2<br>23.5 | 1,718<br>5.7<br>18.8 | 310<br>1.0<br>12.8 | 72<br>.2<br>10.5 | 21<br>.07<br>8.5 |
| - xpected To Be aid on This Transaction | 26,638<br>100.0%<br>22.3 | 20,350<br>76.4<br>26.4 | 5,126<br>19.2<br>17.0 | 1,008<br>3.8<br>11.0 | 129<br>.48<br>5.3 | 17<br>.06<br>2.5 | 8<br>.03<br>3.2 |
| -- Expected To Be Paid on an Earlier Transaction | | | | | | | |
| • One Prior To Latest | 2,707<br>100.0%<br>2.2 | 663<br>24.5<br>.86 | 1,765<br>65.2<br>5.8 | 197<br>7.3<br>2.2 | 60<br>2.2<br>2.5 | 16<br>.59<br>2.3 | 5<br>.18<br>2.0 |
| • Two Prior To Latest | 779<br>100.0%<br>.65 | 128<br>16.4<br>.16 | 124<br>15.9<br>.41 | 482<br>61.9<br>5.3 | 34<br>4.4<br>1.4 | 9<br>1.2<br>1.3 | 2<br>.26<br>.81 |
| • More Than Two Prior to Latest | 231<br>100.0%<br>.19 | 35<br>15.1<br>.04 | 42<br>18.2<br>.14 | 31<br>13.4<br>.34 | 87<br>37.7<br>3.6 | 30<br>12.9<br>4.4 | 6<br>2.6<br>2.4 |

1/ These are row percents.

2/ These are column percents.

3/ Row and column percents may not add to 100 due to rounding.



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another institution. They will only serve to prolong the processing of their application since it is flagged for validation regardless of which (or how many) institutions they apply to for payment.

Table 5.12 shows the variation in timing of expected payment to validation applicants by major validation subgroups.

This table indicates that the PEC C group has entered the recipient file more frequently than those from any other validation group. However, a greater percentage of PEC C applicants than applicants from any other validation group are paid on transactions which precede the latest transaction. These applicants are more likely than validation applicants meeting PEC B or A criteria to be paid prior to validation since they do have an eligibility index prior to their selection for validation.

In summary, the preceding analyses allow us to draw the following conclusions about the impact of validation:

CONCLUSION #12: Most of the items for validation are already valid at applicants' selection for validation. Items relating to the applicants' household--dependency status, number enrolled in postsecondary education and household size--are valid at selection in more than 90 percent of the cases. Financial items--adjusted gross income, taxes paid, nontaxable income, and sum of portions earned--are valid at selection in more than 88 percent of the cases. Additionally, most of the items that were valid at selection are also valid pre selection. This suggests that either: (1) the edits are causing applicants to make necessary corrections prior to their selection for validation or (2) applicants who reported data which appeared inconsistent were, in fact, accurate. Phase II of the Corrections Analysis will examine the timing of valid data items relative to receipt of specific edits.

CONCLUSION #13: Three-fourths of the validation applicants were not yet on the recipient file as of the end of February, 1979. Our analysis of applicants on the recipient file shows that the average difference in expected payment between the selection and payment transactions is one which reduces those applicants' award potential.

TABLE 5.12: TIMING OF EARNED/MEAN/ZERO VARIATION APPLICANTS BY APPLICANT SUBGROUP

| | PEC | PEC A | PEC B | PEC C | Random |
|---|---|---|---|---|---|
| Total: | 104,162 | 82,522 | 15,303 | 7,719 | 15,628 |
| Not Yet On Recipient File | 78,090<br>75.0% 1/ | 62,381<br>75.6% | 11,476<br>75.0% | 5,232<br>67.8% | 11,308<br>72.4% |
| Expected To Be Paid | 26,072<br>25.0 | 20,141<br>24.4 | 3,827<br>25.0 | 2,487<br>32.2 | 4,320<br>27.6 |
| --On the Latest Transaction | 22,733<br>21.8 | 17,679<br>21.4 | 3,497<br>22.8 | 1,818<br>23.5 | 3,938<br>25.2 |
| --On 1 Prior To Latest Transaction | 2,418<br>2.3 | 1,800<br>2.2 | 235<br>1.5 | 463<br>5.9 | 293<br>1.9 |
| --On 2 Prior To Latest Transaction | 703<br>.67 | 509<br>.61 | 70<br>.45 | 153<br>1.9 | 76<br>.48 |
| --On More Than 2 Prior To Latest Transaction | 218<br>.20 | 153<br>.18 | 25<br>.16 | 53<br>.68 | 13<br>.08 |

1/ These are all column percents. They may not add to 100 due to rounding.

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CONCLUSION #14: Most of the applicants who are on the recipient file were paid on the last transaction of record. However, approximately one percent of the validation applicants do not appear to have been validated since they were paid on a transaction which preceded their selection for validation. Another two percent of validation applicants were paid on a transaction prior to their latest, but subsequent to the transaction on which they were selected for validation. These applicants are most likely attempting to increase their award potential and then applying to another institution. This hypothesis can only be verified when the validation roster is completed.

## 5.4: IMPACT OF VALIDATION LESS EFFECTS OF APPLICATION SOURCE AND PROCESSING SYSTEM EDITS

The previous section addressed the apparent effects of validation in terms of the extent and timing of valid data items on the applications, the mean change in expected payment from selection to payment, and the relationship of the transaction of payment to the applicants' last transactions. However, that analysis assumed that validation alone was responsible for applicants' corrections or for changes in expected payments. It is possible that the processing system edits and various application sources are also having an impact on applicants' behaviors.

Chapter 3 discussed the comparative validity of data fields by application source as well as the changes in expected award by application source. Table 3.5 demonstrated that there is significant variation in the overall validity of data by application source. Applicants who apply through ACT are most likely to have valid data, both prior to and at selection. BEOG applicants are least likely to have valid items at selection, and CSS and PHEAA applicants, least likely to have items that were valid at selection and always valid pre selection. Furthermore, ACT filers are almost twice as likely to be paid as PHEAA filers. The data in this table suggest several conclusions:

CONCLUSION #15: Validation is likely to be less necessary for ACT filers than for filers from any other source.

CONCLUSION #16: The processing system edits appear to be working more effectively for CSS and PHEAA filers than for BEOG filers. Earlier analyses demonstrated that CSS and PHEAA applicants had higher than average rates of rejection for missing data items. BEOG applicants, on the other hand, tend to have lower income than CSS and PHEAA filers, and are probably receiving edits related to data inconsistencies more often than to missing data. These types of edits are more difficult to respond to, and BEOG applicants appear to be experiencing some difficulty in responding appropriately. Validation may be aiding BEOG filers (in the sense of assisting them in making appropriate changes to their advantage) in filling out the form.

CONCLUSION #17: PHEAA filers tend to become ineligible at much higher rates than applicants from other sources. This probably explains their comparatively low rate of expected payment. However, PHEAA filers appear to be making most of the required changes prior to validation, probably in response to the edits.

With regard to differences in expected payment by application source, Table 3.7 contains the data necessary to this assessment. This table showed that the variation by application source in change in expected payment from selection to payment was substantial. The largest average reductions in expected payment occurred for PHEAA applicants, followed by ACT, CSS and BEOG, respectively. This supports the previously-stated hypothesis that validation may be aiding BEOG applicants to a greater extent than those filing from other sources. Thus, it appears that the processing system edits work to effect most of the necessary changes (chiefly supplying data in fields that were blank) for CSS and PHEAA applicants. The results of these analyses suggest that validation may often be unnecessary for ACT applicants, and may be serving a financial aid counseling function for BEOG applicants. Overall, it does not appear to be effecting changes that would be indicative of correcting misreporting.

The separate impact of the processing system edits was discussed in Chapter 4. The analyses centered on the response mode of applicants who had received new, tightened or other edits, and the resultant changes in expected payment. As Table 4.2 indicates, applicants' corrections in

response to comments tended to result in reduced award potential. It should be remembered that these calculations included only those applicants who were on the recipient file. These applicants, as shown in Tables 5.7 and 5.8, have, on the average, reduced their award potential from selection to payment.

Table 5.13 demonstrates the interactive effects of the processing system edits and the validation process. Values for the validation fields at various points in time were compared to determine whether the edits or validation was responsible for the valid data item. The following categories were used to make this determination for applicants on the recipient file:

(1) Applicants whose value of payment does not equal the value at selection and does equal the value at receipt of the edit.

In this type of case, the edit caused the applicant to make unnecessary corrections to her/his disadvantage, and validation aided the applicant in reporting accurate datea (i.e., value was changed back to what it was at receipt of edit).

(2) Applicants whose value at payment is equal to the value at selection and not equal to the value at receipt of the edit.

In this type of case, the edit caused the applicant to make the necessary correction before applicants' selection for validation, rendering validation unnecessary.

(3) Applicants whose value at payment does not equal the value at selection and does not equal the value at receipt of the edit.

In this type of case, applicants did not make the necessary changes in response to the edit; therefore the edit was not effective and validation was necessary.

Table 5.13 shows the results of this analysis applied to all validation applicants.

This table shows that three percent of all validation applicants who were expected to be paid, were paid before selection for validation. These cases could be attributed to the late publication of the regulations requiring financial aid officers to validate.

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TABLE 5.13: INTERACTION OF EFFECTS OF VALIDATION AND EDITS ON THE TOTAL VALIDATION APPLICANTS

| | VALIDATION FIELDS | | | | | |
|---|---|---|---|---|---|---|
| | ADJUSTED GROSS INCOME | SUM OF PORTIONS | TAXES PAID | NONTAXABLE INCOME | POST HIGH EDUCATION | HOUSEHOLD SIZE |
| TOTAL APPLICANTS | 119,790 | 119,790 | 119,790 | 119,790 | 119,790 | 119,790 |
| # WHO ARE NOT ON RECIPIENT FILE | 89,435 | 89,435 | 89,435 | 89,435 | 89,435 | 89,435 |
| # WHO WERE PAID BEFORE SELECTION | 1,030 | 1,030 | 1,030 | 1,030 | 1,030 | 1,030 |
| # WHO WERE PAID AT OR AFTER SELECTION | 29,327 | 29,327 | 29,327 | 29,327 | 29,327 | 29,327 |
| # WHO RECEIVED EDIT TO THIS FIELD PRIOR TO SELECTION | 22,741 | 11,937 | 16,289 | 16,391 | 4,924 | 17,311 |
| % CHANGED THIS FIELD FROM EDIT TRANSACTION TO SELECTION TRANSACTION | 34.81 | 39.44 | 42.05 | 44.14 | 24.92 | 17.45 |
| % WHOSE VALUE AT PAYMENT DOES NOT = VALUE AT SELECTION AND DOES = VALUE AT EDIT | 0.97 | 2.49 | 1.14 | 1.74 | 7.74 | 5.94 |
| % WHOSE VALUE AT PAYMENT = VALUE AT SELECTION AND IS NOT = TO VALUE AT EDIT. | 90.04 | 91.14 | 89.38 | 90.87 | 90.95 | 92.48 |
| % WHOSE VALUE AT PAYMENT DOES NOT = VALUE AT SELECTION AND IS NOT = TO VALUE AT EDIT | 8.99 | 6.38 | 9.50 | 7.39 | 1.30 | 3.58 |
| % WHO VERIFIED THE FIELD FROM EDIT TRANSACTION TO SELECTION TRANSACTION | 45.19 | 60.56 | 57.95 | 55.86 | 75.08 | 82.55 |
| % WHOSE VALUE AT PAYMENT = VALUE AT SELECTION = VALUE AT EDIT | 88.55 | 92.32 | 88.19 | 90.79 | 98.70 | 97.34 |
| % WHOSE VALUE AT PAYMENT DOES NOT = VALUE AT SELECTION AND IS NOT = TO VALUE AT EDIT | 11.45 | 7.68 | 11.81 | 9.21 | 1.30 | 2.66 |

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With respect to the three possible categories of response to edits and validation, the data indicate that validation was unnecessary to obtain valid data items with 88 percent or better frequency. There is variation in the effectiveness of the edits with regard to different data items, however. For household items--number enrolled in postsecondary education and household size--the edits caused applicants to erroneously correct fields more often than other fields. Validation was more likely to be necessary to achieve valid data for adjusted gross income, sum of portions, taxes paid, and nontaxable income. Edits were least effective in soliciting valid taxes paid, where validation was necessary in 9.5 percent of the cases for those who changed this field prior to selection, and in 11.4 percent of the cases for those who verified in resonse to a comment to this field pre selection.

These analyses also point out that the effectiveness of the processing system edits may have rendered a full-scale validation effort unnecessary. The differences in corrections behavior of validation and nonvalidation applicants demonstrated the efficacy of some of the pre-established criteria in selecting applicants most likely to misreport data on their applications. The differences are, however, much less marked for those who do not meet the pre-established criteria, and for the randomly-selected validation applicants, a finding which substantiates the choice of some of the PEC for selecting applicants. The data show that about 90 percent of items to be validated are accurate before validation takes place. Both the discriminant analysis and the analyses of the validity of data items indicate that approximately 7 to 10 percent of applicants selected for validation are misreporting data. The remainder have either made the necessary corrections prior to their selection for validation or are being aided by validation in reporting data which is accurate, but which increases their award potential. Therefore, it would appear that validation may be needed on a limited basis for applicants who meet the following conditions:

1) applicants who meet the A6 criteria and report no farm or business assets;

2) applicants who meet the combination of A2 and A6 criteria, A2 and A3, and A6 and A3;

3) applicants who meet the PEC C criteria, and those who meet criterion B3; and

4) applicants applying from BEOG.

These are the applicants who, more frequently than others, meet the income tax inconsistency condition which accounts for the greatest degree and occurrence of misreporting.

Following (on the next page) is a summary of the major findings with respect to the applicant study populations.

These data clearly indicate that validation applications are being processed more slowly than those not selected for validation. Validation applicants, regardless of whether they are or are not on the recipient file, have submitted corrections since their selection with much greater frequency than nonvalidation applicants after attaining eligibility. However, the past eligibility EI changes of nonvalidation applicants meeting the PEC are larger than the post selection EI changes of random validation applicants, and more closely approximate those of the PEC validation applicants. This suggests that the PEC are relatively effective indicators of potential misreporting and that validation could be serving as a deterent to misreporting for applicants who meet these conditions.

SUMMARY OF FINDINGS WITH RESPECT TO THE APPLICANT STUDY POPULATIONS

| | ALL APPLICANTS | PEC | RANDOM | NON VALIDATION MEETING PEC | NON VALIDATION NOT MEETING PEC |
|---|---|---|---|---|---|
| Total | 2,124,468 | 104,162 | 15,628 | 341,568 | 1,663,110 |
| % ever correcting | 40.0 | 100 | 55.5 | 100 | 23.7 |
| $\bar{X}$ effective EI change | +15.1 | + 58 | + 29 | + 5 | + 13 |
| % correcting since selection or eligibility | 8.1 | 36.7 | 27.4 | 7.6 | 6.2 |
| $\bar{X}$ effective EI change | + 77 | + 158 | + 58 | + 71 | + 49 |
| % on recipient file | 45.2 | 25.0 | 27.6 | 43.1 | 47.0 |
| % correcting since selection or eligibility | 6.4 | 30.7 | 26.9 | 6.8 | 5.4 |
| % not on recipient file | 54.8 | 74.9 | 72.3 | 56.8 | 52.9 |
| % not correcting since selection or eligibility | 90.5 | 61.2 | 72.3 | 91.7 | 93.0 |

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# APPENDIX A

# RESULTS OF DISCRIMINANT ANALYSIS

## DISCRIMINANT ANALYSIS

### Purpose

The purpose of conducting the discriminant analysis was to determine whether there are any conditions which more accurately predict misreporting than the existing pre-established criteria (PEC). A discriminant analysis is a statistical technique which classifies persons, objects, etc. by the set of characteristics they possess, into two or more groups. For the Pre-Award Validation (PAV) Study, the objective of the discriminant analysis was to find those variables (characteristics/conditions) which successfully classify BEOG validation applicants into one of two groups: (1) those who submit post selection corrections which result in an increase to the eligibility index of 100 points or more, and (2) those who either do not submit post selection corrections, or whose corrections result in less than a 100-point increase to the eligibility index, a decrease to the index, or no change in the index. Those who are in the first category could be misreporters.

The discriminant analysis was also designed so that applicants could be classified into one of the two groups based on the application data of their first transaction. Over 50 variables were included in this analysis, which were of six major types, as follows:

- Household and financial data
- Eligibility status on the first transaction
- Application source
- Existing PEC
- Ratio values of household and financial variables, and
- Certain conditions tested as new PEC.

The complete list of variables can be seen in Exhibit A.1. The intent of this analysis was to determine whether the current method of selecting applicants for validation according to the pre-established criteria could be improved. Through an assessment of whether any conditions other than the PEC effectively distinguished potential misreporters (those who made

EXHIBIT A.1: INDEPENDENT VARIABLES INCLUDED IN DISCRIMINANT ANALYSIS

HOUSEHOLD AND FINANCIAL VARIABLES

- Parents' age
- Household size
- Post high enrollment
- Exemptions
- Nontaxable income
- Adjusted gross income
- Mother's (or spouse's) portion
- Father's (or spouse's) portion
- Taxes paid
- Itemized deductions
- Medical/dental/casualty/theft loss
- Unreimbursed tuition
- Home assets
- Investment assets
- Farm assets
- Applicant's resources
- Veteran's educational benefits
- Social Security benefits
- Marital status
- Dependency status

ELIGIBILITY STATUS

- Eligibility index
- Eligible on first transaction
- Previously rejected
- Ineligible on first transaction

APPLICATION SOURCE

- BEOG
- ACT
- CSS
- PHEAA

EXHIBIT A.1: (Continued)

EXISTING PEC

-- A1
-- A2
-- A3
-- A4 and A5
-- A6
-- A6
-- A7
-- A8
-- A9
-- A10

RATIO VALUES OF HOUSEHOLD AND FINANCIAL DATA

-- $\frac{HS}{PHE}$

-- $\frac{AGI}{NTI}$

-- $\frac{AGI}{Portions}$

-- $\frac{NA}{AGI + NTI}$

-- $\frac{AGI + NTI}{TP}$

-- $\frac{AGI + NTI}{AR}$

-- $\frac{UE}{AR}$

-- $\frac{AGI + NTI}{UE}$

-- $\frac{AGI + NTI}{UT}$

-- $\frac{AGI + NTI}{SSA}$

-- $\frac{VEB + SSA}{UT}$

EXHIBIT A.1: (Continued)

NEW PEC CONDITIONS _

- Exemptions ≠ HS
- Marital status single, independent, HS > 1, zero income, zero Social Security or veteran's benefits
- No SSN
- Portions > AGI + itemized deductions
- PHE > 5

corrections to their disadvantage post selection which resulted in an increase to EI of at least 100 points) from those not likely to misreport, on applicants' first transaction. If this were possible, selection for validation could occur earlier and application processing could require fewer transactions to accomplish a valid application.

## Methodology

Several runs of the discriminant analysis were made for this study. Each run incorporated procedural changes in an attempt to refine the predictive ability of independent variables. The methodology for conducting each iteration of the discriminant analysis is explained below.

### First Run

The first discriminant run was conducted using the entire population of random validation applicants. Although the analysis specifications stated that the random applicants would be split into two even groups, one to conduct the analysis and the other to test the results of the first run, this was not feasible, due to the very small number of actual cases in Group 2 (those who made post selection corrections resulting in an EI increase of at least 150 points). All of the variables were used in this run. Only one discriminant function was utilized.

### Second Run

Before conducting the second run, we performed a factor analysis on the random applicants, using the same data base that was used in the first run. The purpose of the factor analysis was to determine if there were characteristics which distinguished applicants from each other. The results showed that there were, in fact, six identifiable groups of dependent applicants and seven identifiable groups of independent applicants, based on data not reported on the first transaction. These groups had the following characteristics:

Dependents

Group 1: Income Factor

Component Variables: AGI and Father's portion

Group 2: Tax Offset Factor

Component Variables: Itemized deductions, losses, home assets

Group 3: Other Income Factor

Component Variable: Mother's portion

Group 4: Cash Asset Factor

Component Variables: Cash assets, applicant's resources

Group 5: Other Income and Benefit Factor

Component Variables: Nontaxable income, social security benefits, veteran's educational benefits

Group 6: Investment Asset Factor

Component Variables: Investment assets, business assets

The groups are the same for the independent applicants with several exceptions: (1) mother's and father's portions are spouse's portion, and (2) veteran's educational benefits was a separate factor for the independents. Each of these thirteen groups constituted a separate discriminant function for the second run. This analysis was also adjusted for prior probability of membership in Group 1 or Group 2 because the actual distribution of cases between the two groups was so uneven.

Third Run

For this run, the criterion for membership in Group 2 was relaxed from EI increase of 150 points to 100 points, in an attempt to obtain a more even distribution between the two groups. It was also decided that a sample of the PEC applicants would be added to the complete file of random validation applicants. (Every seventh PEC applicant was selected from the PEC population for this purpose). Furthermore, the analysis was run on the latest available applicant file -- as of February 1979.

RESULTS OF THE ANALYSIS

With each successive run, better prediction of group membership was achieved. Therefore, only the results of the third run are discussed here.

The range of correctly classified Group 2 cases for the thirteen discriminant functions was from a low of 3.2% for the independents without tax offsets present to a high of 50% for the independents without business assets present. Any function that predicts Group 2 membership with a better than 5% accuracy is, however, an improvement upon the existing ability to classify potential misreporters. Currently, only 5 out of every 100 applicants meets the definition of a potential misreporter (those correcting to their disadvantage post selection with a resultant EI increase of at least 100 points). Thus, if we were to select 100 applicants at random for validation, the probable frequency of misreporting in that sample would be 5 applicants. Using a discriminant function that classified Group 2 applicants correctly 20% of the time, on the other hand, out of every 100 applicants selected in this manner, 20 would be potential misreporters.

The results of this analysis can be most succinctly illustrated in an exhibit which provides the percent correctly classified into Group 2 for each of the functions and the 5 independent variables which contribute most to the predictor equations.

Exhibit A.2 shows that the most successful functions are:

-- Ind. - Business assets Absent/Not Reported
-- Dep. - Income Absent/Not Reported
-- Ind. - Nontaxable income Absent/Not Reported
-- Dep. - Business assets Absent/Not Reported

The following variables contribute most to the prediction of a misreporter in these four functions:

-- UT
-- VEB
-- Ratio HS/PHE
-- A6

— Ratio $\frac{\text{AGI} + \text{NTI}}{\text{UT}}$
— Mother's portion
— EI
— A2
— Cash Assets
— A4
— Marital Status - single
— Portions AGI plus itemized deductions
— Father's portion
— Social Security benefits

Although there is some overlap among the most important variables in each function (particularly, A6, A2, unreimbursed tuition, Portions > AGI + itemized deductions, and mother's portion) each of these functions is fairly independent in terms of the contributing variables. The most frequently occurring in the top 5 variables across all 13 functions are:

| Variable | No. Functions in Which It Appears |
|---|---|
| PEC A6 | 11 |
| Social Security benefits | 9 |
| Portions > AGI + itemized deductions | 5 |
| Father's portion | 5 |
| Mother's portion | 5 |
| Nontaxable income | 4 |
| Exemptions | 4 |
| PEC A2 | 3 |
| Cash assets | 3 |

It is interesting to note the relatively high importance of social security benefits as a contributing factor. This data, plus that contained in Chapter 5 concerning the fields to which corrections resulted in large EI changes, suggest that this field be the basis for a criteria for validation selection. Again, as in all previous analyses, PEC A6 is the best predictor of potential misreporting. The modifications to this criterion, discussed in Chapter 2, could be considered in revising the selection criteria.

Because the results obtained with the discriminant analysis did not significantly improve upon the existing pre-established criteria, we conclude that it is very difficult to predict misreporting based on a single transaction containing application data only. Two types of investigations may be warranted in future analyses of this type: (1) the addition of certain demographic data to the applicant data base and (2) the reliance upon multiple rather than single transactions as the unit of analysis, which would utilize applicants' corrections behaviors.

## EXHIBIT A.2: RESULTS OF DISCRIMINANT ANALYSIS

| Group | % Potential Misreporters Correctly Classified | Most Important Contributing Variables | Direction of Relationship of the Equation |
|---|---|---|---|
| DEP-Tax Offsets Absent | 15.4% | PEC A6 | Negative |
| | | PEC A2 | Negative |
| | | BEOG Applicant | Positive |
| | | Father's Portion | Negative |
| | | Mother's Portion | Negative |
| DEP-Cash Assets Absent | 20.0% | PEC A6 | Negative |
| | | Father's Portion | Negative |
| | | Portions > AGI if Itemized Deductions | Negative |
| | | Mother's Portion | Negative |
| | | Social Security Benefits | Negative |
| DEP-Nontaxable Income Absent | 15.3% | PEC A6 | Negative |
| | | Home Assets | Negative |
| | | Mother's Portion | Negative |
| | | Cash Assets | Negative |
| | | Medical/Dental/Casualty loss | Negative |
| DEP-Mother's Portion Absent | 18.9% | PEC A6 | Negative |
| | | Father's Portion | Negative |
| | | Exemptions | Positive |
| | | PEC A2 | Negative |
| | | Social Security Benefits | Negative |
| DEP-Business Assets Absent | 20.3% | PEC A6 | Negative |
| | | Portions > AGI if Itemized | Negative |
| | | Father's Portion | Negative |
| | | Mother's Portion | Negative |
| | | Social Security Benefits | Negative |
| DEP-Income Absent | 32.4% | Mother's Portion | Positive |
| | | PEC A2 | Negative |
| | | PEC A6 | Positive |
| | | Cash Assets | Positive |
| | | Social Security Benefits | Positive |
| DEP-Tax Offsets Absent | 3.2% | Exemptions | Positive |
| | | Social Security Benefits | Negative |
| | | Nontaxable Income | Positive |
| | | PEC A3 | Negative |
| | | Household Size | Negative |

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**EXHIBIT A.2: (Continued)**

| Group | % Potential Misreporters Correctly Classified | Most Important Contributing Variables | Direction of Relationship of the Equation |
|---|---|---|---|
| IIA) Cash Assets Absent | 18.6% | PEC A6 | Negative |
| | | Exemptions | Positive |
| | | Social Security Benefits | Negative |
| | | Nontaxable Income | Positive |
| | | Portions > AGI & itemized deductions | Negative |
| IIB) Nontaxable Income Absent | 24.7% | PEC A6 | Negative |
| | | Single Marital status | Negative |
| | | Portions > AGI & itemized deductions | Negative |
| | | Unreimbursed school tuition | Positive |
| | | Cash Assets | Negative |
| IIC) Veterans Educational Benefits Absent | 19.0% | PEC A6 | Negative |
| | | Social Security Benefits | Negative |
| | | Nontaxable Income | Positive |
| | | Portions > AGI & itemized Deductions | Negative |
| | | AGI | Negative |
| IID) Business Assets Absent | 50.0% | Unreimbursed school tuition | Positive |
| | | Veterans' educational benefits | Positive |
| | | Ratio WS/PHE | Negative |
| | | PEC A6 | Positive |
| | | Ratio AGI_1_WII / WT | Negative |
| IIE) Spouse Portion Absent | 14.2% | PEC A6 | Negative |
| | | Exemptions | Positive |
| | | Social Security Benefits | Negative |
| | | Father's Portion | Negative |
| | | PHE | Negative |
| IIF) Income Absent | 4.1% | Social Security Benefits | Negative |
| | | Applicants Resources | Negative |
| | | Single Marital Status | Negative |
| | | Married Marital Status | Negative |
| | | Nontaxable Income | Positive |

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# APPENDIX B

## Assumptions for Key Data Fields of Rejected Applicants

## ASSUMPTIONS FOR COMPUTING ELIGIBILITY INDEX WHEN APPLICANT IS REJECTED

I: For rejected applicants with blanks or zeros in one or more fields assume the following:

**AGI & Portions:**

(a) if AGI is blank and 2 portions present, use the 2 portions;

(b) if AGI is blank and 1 portion present, use 1 portion;

(c) if AGI is blank and no portions present, assume zero;

(d) if AGI is present and portions blank, assume 1 portion.

**NTI:** if NTI is blank, assume zero

**Unusual Expenses (UE):** if UE is blank, assume zero

**Unreimbursed School Tuition (UT):** if UT is blank, assume zero

**Assets:** if assets are blank, assume zero

**Taxes Paid:**

(a) if blank, and AGI, household size and marital status present, compute;

(b) if blank, and other critical fields blank, assume zero

**Veteran's Educational Benefits:**

(a) if month and amount are blank, assume zero;

(b) if amount is present and number of months missing, assume 9;

(c) if number of months is present and amount missing, assume the following:

-- if household size = 0, assume $249;

-- if household size = 1, assume $296;

-- if household size = 2, assume $338;

-- if household size is 3 or more, assume $338 + $26 for each person over 2



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Household Size (HS):

(a) if HS is blank, use exemptions;

(b) if HS is blank, and exemptions blank, assume the following:

-- if dependent and parents are married, assume 3;

-- if dependent and parents are divorced, widowed, single, separated, assume 2;

-- if dependent and parents are deceased, assume 1;

-- if independent and married, assume 2.

-- if independent and single, divorced, widowed or separated, assume 1

II. If applicants are rejected for inconsistent values, use the values given on the application.

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APPENDIX C

Pre-established Criteria

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Following is a general explanation of the pre-established criteria (PEC) used to select approximately 87 percent of the applicants to be validated:

PEC A: Applicants who establish eligibility after rejection of a transaction through correction where the rejection reason meets one or more of the following categories:

- A1: Missing or inappropriate information for household size and marital status
- A2: Portions and AGI inconsistent
- A3: Unusual expenses and income inconsistent
- A4, A5: Income and benefits insufficient to support indicated household size
- A6: Income and taxes paid inconsistent
- A7: Financial data missing
- A8: Missing or internally inconsistent income information
- A9: Applicant's resources reduced
- A10: Any A criterion in combination with an unusually large number in the household enrolled in post-high education (PHE)

PEC B: Applicants who establish eligibility with one correction resulting in a large eligibility index (EI) change.

- B1: Large EI change
- B2: Larger EI change
- B3: Meets B1 or B2 and has an unusually large PHE.

PEC C: Applicants who reduce their highest EI in one continuous, official string of transactions.

- C1: Large EI change
- C2: Larger EI change
- C3: Meets C1 or C2 and has unusually large PHE.